

# The Global Green Finance Index 14



London

Zurich

Singapore

Geneva

New York

Stockholm

Los Angeles

Luxembourg

Copenhagen

Montreal

October 2024



Sustainable Futures





Beginning in March 2018, as part of its Long Finance initiative, Z/Yen published the first five editions of the Global Green Finance Index with the generous support of the MAVA Foundation, and more recently with support from Abu Dhabi Global Market. Z/Yen continues this work and is pleased to present the fourteenth edition of the Global Green Finance Index (GGFI 14).

[Z/Yen](#) helps organisations make better choices - our clients consider us a commercial think-tank that spots, solves, and acts. Our name combines Zen and Yen - 'a philosophical desire to succeed' - in a ratio, recognising that all decisions are trade-offs. One of Z/Yen's specialisms is the development and publication of research combining factor analysis and professional assessments.

[Long Finance](#) is a Z/Yen initiative designed to address the question "***When would we know our financial system is working?***" This question underlies Long Finance's goal to improve society's understanding and use of finance over the long-term. In contrast to the short-termism that defines today's economic views the Long Finance time-frame is roughly 100 years.

The authors of this report, Mike Wardle, Simon Mills, and Professor Michael Mainelli, would like to thank Bikash Kharel, Sasha Davis, Charlotte Dawber-Ashley and the rest of the Z/Yen team for their contributions with research, modelling, and ideas.



# Contents

Section	Page
Summary	2
GGFI 14 Ranks And Ratings	4
GGFI Dimensions	6
Regional Performance	9
Leading Financial Centres	13
GGFI 14 Further Analysis	14
Instrumental Factors	15
Areas Of Competitiveness	17
Commentary On Factors	20
Connectivity	21
Financial Centre Profiles	22
The GGFI 14 World	24
Catastrophes & Insurance – Closing the Gap	26
Regional Analysis	36
North America	37
Middle East & Africa	39
Eastern Europe & Central Asia	41
Western Europe	43
Latin America & The Caribbean	45
Asia/Pacific	47
Stability	49
Industry Sectors	50
Interest, Impact, And Drivers of Green Finance	51
Appendix 1: Assessment Details	55
Appendix 2: Interest, Impact, And Drivers Details	57
Appendix 3: Respondents’ Details	59
Appendix 4: Methodology	61
Appendix 5: Instrumental Factors	64

## Summary

### Overview

This is the fourteenth edition of the Global Green Finance Index (GGFI 14). The GGFI is a factor assessment index, based on a range of instrumental factors - quantitative measures - and a worldwide survey of finance professionals' assessments on the quality and depth of green finance offerings in financial centres. GGFI 14 features 97 financial centres, with Minneapolis/St Paul entering the index for the first time.

There appears to be a slight drop in confidence in the development of green finance in financial centres. In the last edition of the index, the average rating was up 4.21%, whereas in this edition the average rating is down 1.96% compared with GGFI 13, with only six centres improving their ratings.

We continue to see strong performance from Western European centres, which reflects their history of developing green finance products and expertise. North American centres are also performing well. The general commitment of a city or jurisdiction to sustainability is a strong influence on the depth and quality of green finance in a financial centre.

Among those responding to the GGFI survey, Energy Efficient Investment, Disinvestment From Fossil Fuels, and Green Loans are rated as the areas of green finance with most impact, while Energy Efficient Investment, Renewable Energy Investment, and ESG Analytics are seen as the areas of most interest.

Underlining the importance of policy in green finance, Risk Management Frameworks, Policy and Regulatory Frameworks, and International Initiatives, are listed by respondents as the major drivers of green finance.

In the supplement to this edition of the GGFI, we consider the response of the insurance industry to the increasing risk of climate-induced catastrophes. We also explore the for a global climate risk pool funded either through a global insurance levy, or donations from developed countries with cover provided through existing commercial markets.

### Index Results

- London retained its first position in the index, while Zurich and Singapore overtook Geneva to take second and third places.
- Copenhagen re-entered the top 10 in this edition of the index, replacing Washington DC.
- Western European centres take six of the top 10 places, with US centres taking two. Singapore is the only Asia/Pacific centre in this leading group, with Montreal at 10th position.
- The margins separating centres at the top of the index are small. Among the top 10 centres the spread of ratings is only 13 points out of 1,000.
- Rome, Helsinki, and Sofia were the only centres to gain 10 or more places in the rankings, while just six centres fell 10 or more places.

### Western Europe

- Six Western European centres feature in the top 10 in GGFI 14 and a further five centres feature in the top 20.
- The average rating among Western European centres fell 1.82%.

### North America

- New York dropped to fifth place overall, with Los Angeles and Montreal also in the world top 10.
- All centres in North America fell in the ratings, with a fall of 2.46% in the average rating.
- Minneapolis/St Paul entered the GGFI for the first time, ranking 31st in the world.

### Asia/Pacific

- Singapore rose two rank places to take third position overall and leads the Asia/Pacific region, ahead of Seoul, Shenzhen, and Sydney.
- The majority of centres in the region fell in the rankings, with only Singapore, Seoul, Shenzhen, Jakarta, GIFT City-Gujarat, and New Delhi improving.
- The average decrease in the ratings in Asia/Pacific was 2.66%.

### Middle East & Africa

- Dubai led in the Middle East & Africa but fell six rank places to 35th position. Abu Dhabi took regional second place with Casablanca third, retaining its position as the leading GGFI centre in Africa.
- Most centres in the region fell in the rankings, although Mauritius rose four rank places and Bahrain gained five places.
- The average rating in the region fell 2.03%.

### Latin America & The Caribbean

- Sao Paulo overtook Santiago to take the leading position in the Latin America & The Caribbean region in 59th place overall.
- Mexico City overtook Rio de Janeiro to take third place in the region.
- The average rating in the region fell by 1.17%, following an increase of 5.75% in GGFI 13.

### Eastern Europe & Central Asia

- Kaunas took the leading position in Eastern Europe & Central Asia, overtaking Astana and rising six rank places to 58th position.
- Sofia and Istanbul improved substantially, rising 13 and 8 places respectively.
- The average rating in the region fell just 1.02%, the smallest reduction among all regions.

### GGFI 14

GGFI 14 was compiled using 127 instrumental factors. These quantitative measures are provided by third parties including the World Bank, the OECD, and the United Nations. Details can be found in Appendix 5.

The instrumental factors were combined with 4,747 financial centre assessments provided by respondents to the [GGFI online questionnaire](#). A breakdown of the 748 respondents is shown in Appendix 3. Further details of the methodology behind GGFI 14 are in Appendix 4.

The 97 centres listed in GGFI 14 are those which received a minimum of 25 assessments from survey respondents located outside of those centres. Assessments of respondents' home centres were excluded from the data, in order to avoid home centre bias.

## GGFI 14 Ranks And Ratings

Table 1 | GGFI 14 Ranks And Ratings

Centre	GGFI 14		GGFI 13		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
London	1	634	1	648	0	▼14
Zurich	2	633	3	644	▲1	▼11
Singapore	3	630	5	641	▲2	▼11
Geneva	4	628	2	646	▼2	▼18
New York	5	626	4	642	▼1	▼16
Stockholm	6	625	9	636	▲3	▼11
Los Angeles	7	624	8	637	▲1	▼13
Luxembourg	8	623	6	640	▼2	▼17
Copenhagen	9	622	13	630	▲4	▼8
Montreal	10	621	10	635	0	▼14
Oslo	11	620	14	629	▲3	▼9
Washington DC	12	619	7	639	▼5	▼20
Lugano	13	618	18	625	▲5	▼7
San Diego	14	617	19	624	▲5	▼7
Chicago	15	616	11	634	▼4	▼18
Toronto	16	615	16	627	0	▼12
San Francisco	17	614	12	631	▼5	▼17
Paris	18	613	17	626	▼1	▼13
Edinburgh	19	612	24	619	▲5	▼7
Frankfurt	20	611	20	623	0	▼12
Seoul	21	610	22	621	▲1	▼11
Vancouver	22	609	21	622	▼1	▼13
Amsterdam	23	608	15	628	▼8	▼20
Shenzhen	24	607	25	618	▲1	▼11
Hamburg	25	606	34	609	▲9	▼3
Munich	26	605	33	610	▲7	▼5
Brussels	27	604	36	607	▲9	▼3
Madrid	28	603	27	616	▼1	▼13
Sydney	29	602	23	620	▼6	▼18
Busan	30	600	30	613	0	▼13
Minneapolis / St Paul	31	599	New	New	New	New
Boston	32	598	26	617	▼6	▼19
Beijing	33	597	31	612	▼2	▼15
Shanghai	34	596	28	615	▼6	▼19
Dubai	35	595	29	614	▼6	▼19
Glasgow	36	594	44	599	▲8	▼5
Melbourne	37	593	32	611	▼5	▼18
Hong Kong	38	592	37	606	▼1	▼14
Abu Dhabi	39	591	38	605	▼1	▼14
Qingdao	40	590	39	604	▼1	▼14
Atlanta	41	589	47	596	▲6	▼7
Tokyo	42	588	41	602	▼1	▼14
Rome	43	587	54	589	▲11	▼2
Berlin	44	586	42	601	▼2	▼15
Helsinki	45	585	55	588	▲10	▼3
Milan	46	584	45	598	▼1	▼14
Casablanca	47	583	43	600	▼4	▼17
Lisbon	48	582	51	592	▲3	▼10

Table 1 (continued) | GGFI 14 Ranks And Ratings

Centre	GGFI 14		GGFI 13		Change In	
	Rank	Rating	Rank	Rating	Rank	Rating
Calgary	49	581	48	595	▼ 1	▼ 14
Tel Aviv	50	580	52	591	▲ 2	▼ 11
Osaka	51	579	46	597	▼ 5	▼ 18
Vienna	52	578	40	603	▼ 12	▼ 25
Philadelphia	53	577	49	594	▼ 4	▼ 17
Guangzhou	54	576	50	593	▼ 4	▼ 17
Wellington	55	575	35	608	▼ 20	▼ 33
Dublin	56	574	53	590	▼ 3	▼ 16
Isle of Man	57	573	61	582	▲ 4	▼ 9
Kaunas	58	572	64	578	▲ 6	▼ 6
Sao Paulo	59	571	68	574	▲ 9	▼ 3
Jersey	60	570	58	585	▼ 2	▼ 15
Guernsey	61	569	62	581	▲ 1	▼ 12
Astana	62	568	57	586	▼ 5	▼ 18
Jakarta	63	567	65	577	▲ 2	▼ 10
Santiago	64	566	56	587	▼ 8	▼ 21
GIFT City-Gujarat	65	565	66	576	▲ 1	▼ 11
Prague	66	564	70	572	▲ 4	▼ 8
Miami	67	563	59	584	▼ 8	▼ 21
New Delhi	68	562	75	567	▲ 7	▼ 5
Sofia	69	561	82	556	▲ 13	▲ 5
Johannesburg	70	560	67	575	▼ 3	▼ 15
Mexico City	71	559	77	565	▲ 6	▼ 6
Monaco	72	558	76	566	▲ 4	▼ 8
Malta	73	557	74	568	▲ 1	▼ 11
Mauritius	74	556	78	561	▲ 4	▼ 5
Doha	75	555	60	583	▼ 15	▼ 28
Riga	76	554	71	571	▼ 5	▼ 17
Istanbul	77	553	85	549	▲ 8	▲ 4
Kuala Lumpur	78	552	63	580	▼ 15	▼ 28
Rio de Janeiro	79	551	73	569	▼ 6	▼ 18
Kigali	80	550	81	558	▲ 1	▼ 8
Manila	81	549	69	573	▼ 12	▼ 24
Bangkok	82	548	72	570	▼ 10	▼ 22
Warsaw	83	547	84	550	▲ 1	▼ 3
Bermuda	84	546	88	543	▲ 4	▲ 3
Cape Town	85	545	80	559	▼ 5	▼ 14
Liechtenstein	86	544	79	560	▼ 7	▼ 16
Moscow	87	543	89	542	▲ 2	▲ 1
Riyadh	88	542	83	554	▼ 5	▼ 12
Bahamas	89	541	94	535	▲ 5	▲ 6
Bahrain	90	540	95	534	▲ 5	▲ 6
Mumbai	91	539	87	547	▼ 4	▼ 8
Cyprus	92	538	86	548	▼ 6	▼ 10
Cayman Islands	93	537	92	537	▼ 1	0
Almaty	94	536	90	541	▼ 4	▼ 5
Nairobi	95	530	96	531	▲ 1	▼ 1
British Virgin Islands	96	527	91	540	▼ 5	▼ 13
Lagos	97	524	93	536	▼ 4	▼ 12

## GGFI Dimensions

The GGFI ascertains the green finance performance of international financial centres by asking practitioners to rate them on two dimensions:

- The depth to which green finance has penetrated the business of the financial centre, i.e. the prevalence of green financial services and products within the financial centre in question.
- The quality of the green finance products and services on offer.

The purpose of tracking both aspects is to enable respondents to rate a financial centre independently from its market volumes. For example, if a centre adopts weak green labelling standards in a bid to boost volumes, this may show up in the GGFI as a lower quality rating.

The additional data generated through this approach increases granularity. This allows the identification of trends and can assist policy makers to track the impacts of their decisions.

The detailed ratings of the dimensions for the top 15 centres are shown in table 2. Additional details are in Appendix 1.

**Table 2 | Top 15 Centres - Rating Details For Depth And Quality Dimensions**

GGFI 14 Rank	Centre	GGFI Dimensions			
		Green Finance Depth Rank	Green Finance Depth Rating	Green Finance Quality Rank	Green Finance Quality Rating
1	London	3	312	1	322
2	Zurich	2	314	2	319
3	Singapore	3	312	3	318
4	Geneva	5	311	4	317
5	New York	8	310	5	316
6	Stockholm	5	311	6	314
7	Los Angeles	5	311	10	313
8	Luxembourg	9	309	6	314
9	Copenhagen	11	308	6	314
10	Montreal	9	309	11	312
11	Oslo	1	319	30	301
12	Washington DC	14	307	11	312
13	Lugano	11	308	14	310
14	San Diego	21	303	6	314
15	Chicago	17	305	13	311



Chart 1 shows the relationship between ratings of the depth and quality dimensions in the index and the generally close correlation between the assessments of each factor by respondents. Centres close to the trend line are balanced for depth and quality, centres further away have either a better rating for depth, or for quality. The relative score of Malta, Tokyo, and Bermuda for green finance quality are high compared with their scores in depth. On the other side of the line, Oslo, Shenzhen, and Guernsey have high relative scores for depth.

**Chart 1 | Relationship Between Ratings Of Depth And Quality**

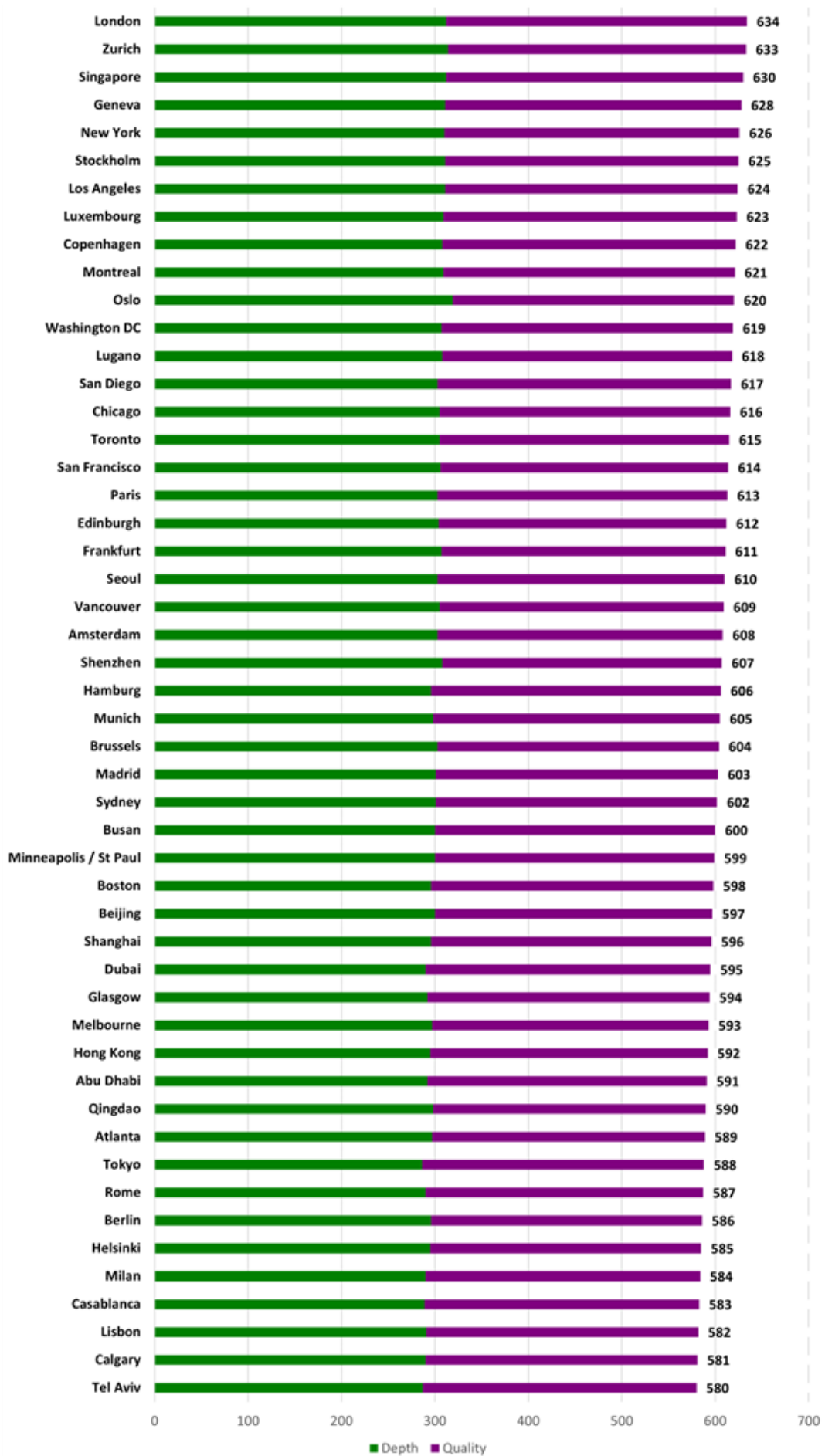


Chart 2 shows the contribution of each of the dimensions to the overall rating for the top 40 centres in the GGFI. London came first for green finance quality but equal third for green finance depth. Successful financial centres focused on green finance have both good quality products and services in their green markets, and depth of investment.

*“Green/carbon border tax regimes are being set in place by multiple countries and jurisdictions (e.g., the EU and Australia).”*

HEAD OF TAXONOMIES, LOCAL GREEN INITIATIVE, LONDON

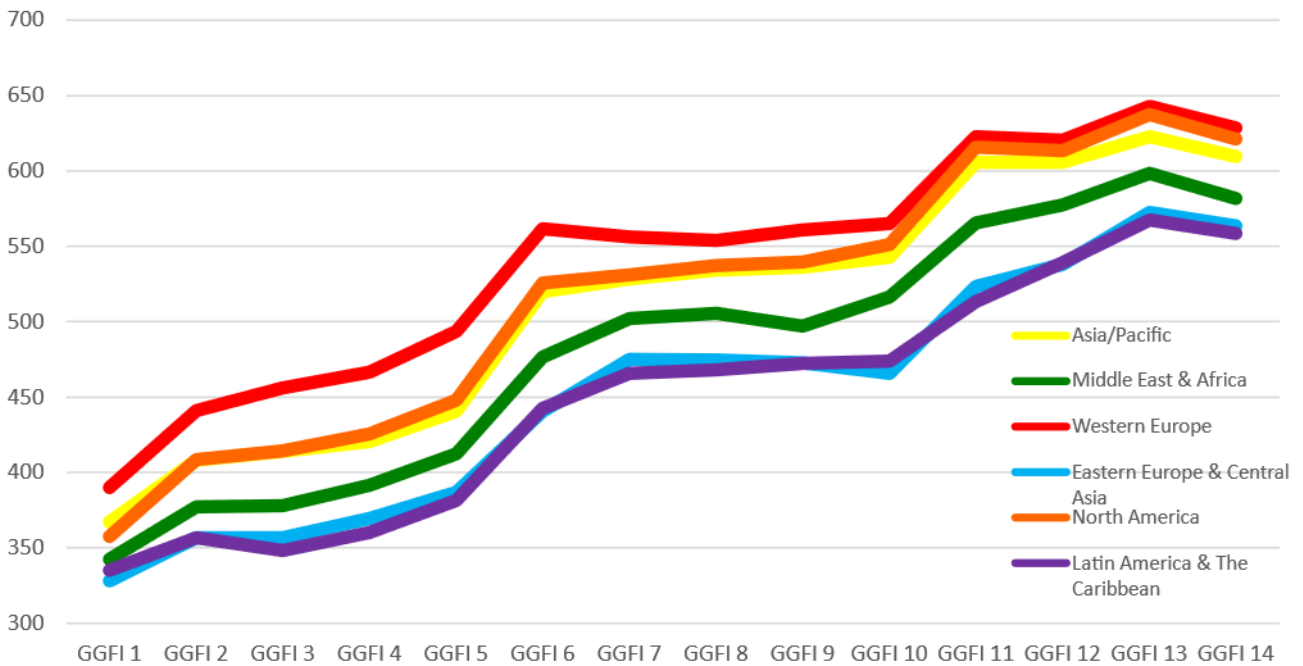
Chart 2 | The Contribution Of The Dimensions To The Overall Rating - GGFI 14 Top 40 Centres



## Regional Performance

The average rating of the top five centres in all regions fell, with Western Europe just ahead of North America on this measure. The leading Asia/Pacific centres follow, and the leading centres in the Middle East & Africa dropped back a little compared with other regions.

**Chart 3 | Average Ratings Of The Top Five Centres In Each Region**

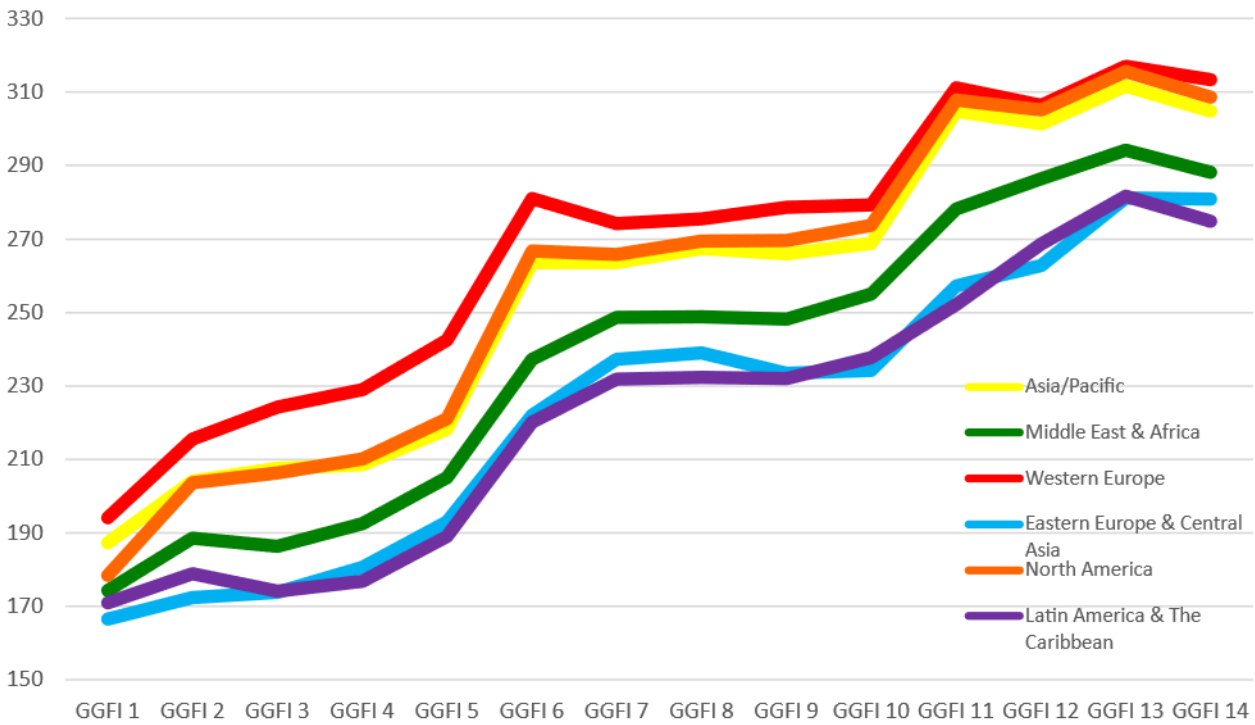


*“Good to see that skills (capacity and capability-building more broadly) are now part of the global Green Finance agenda, e.g., the launch of the Global Capacity Building Coalition and CASI at COP 28.”*

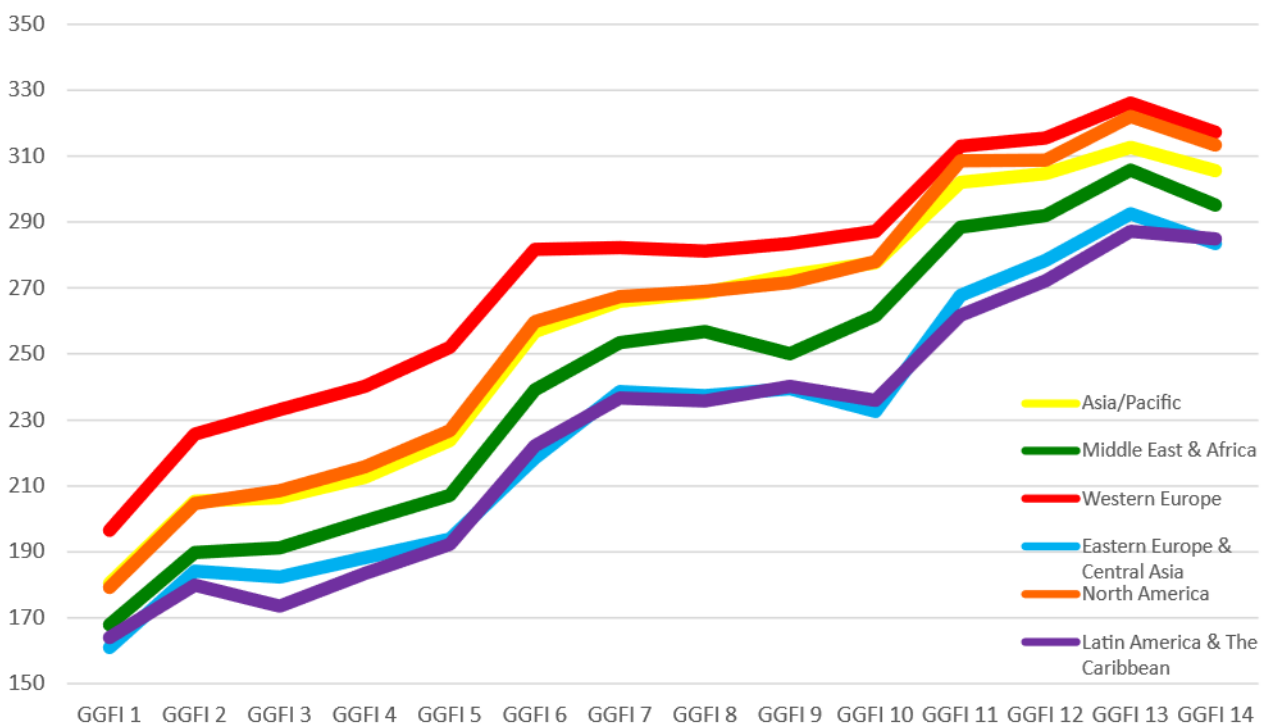
**CEO, KNOWLEDGE SECTOR, EDINBURGH**

Examination of the quality and depth dimensions demonstrates that on both measures, the average rating for the top five centres in all regions fell. In the depth scores, the leading centres in Latin America & The Caribbean narrowly lost their lead over the leading Eastern European & Central Asia centres, although in the quality scores, they overtook the leading centres in Eastern Europe & Central Asia.

**Chart 4 | Average Ratings For Depth Of The Top Five Centres In Each Region**



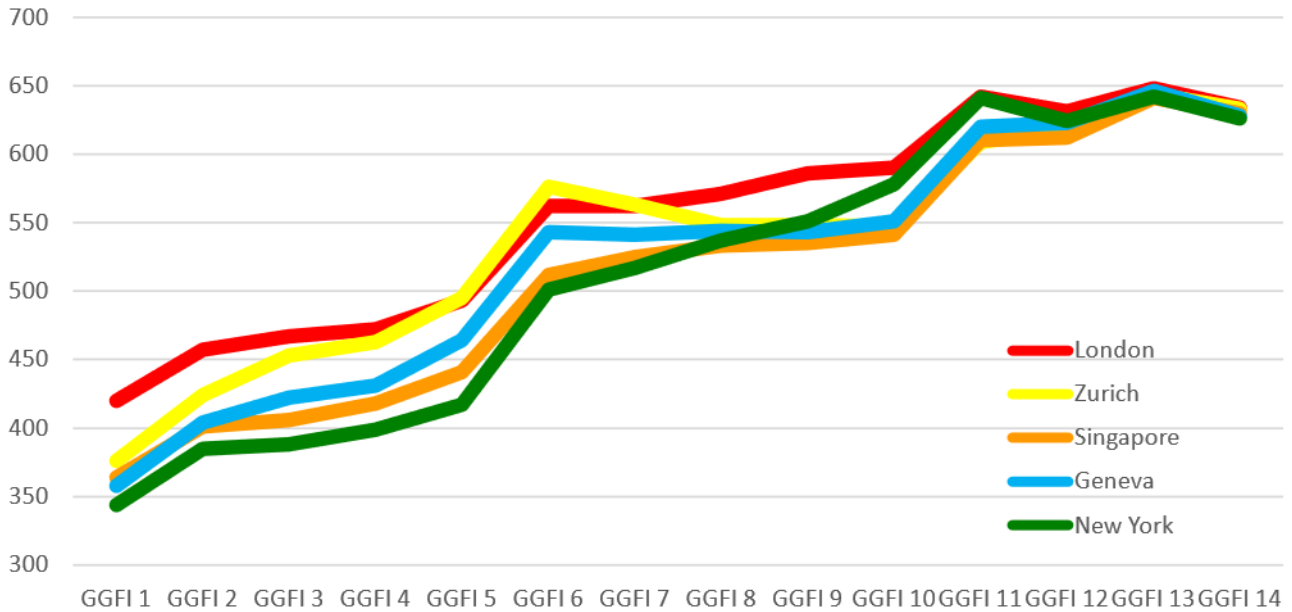
**Chart 5 | Average Ratings For Quality Of The Top Five Centres In Each Region**



## Top Five Centres

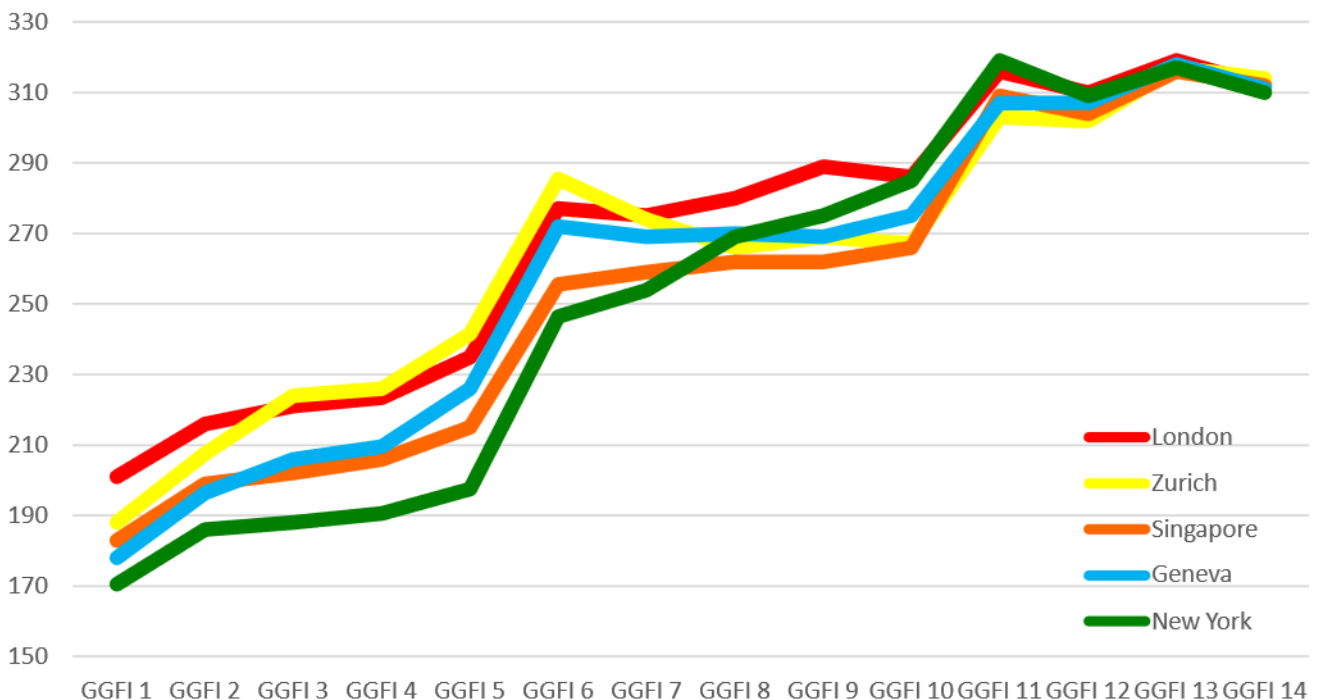
The narrowing of the ratings at the top of the index continued. Only eight points separate London in first position from New York in fifth.

**Chart 6 | The Top Five Centres Over Time**



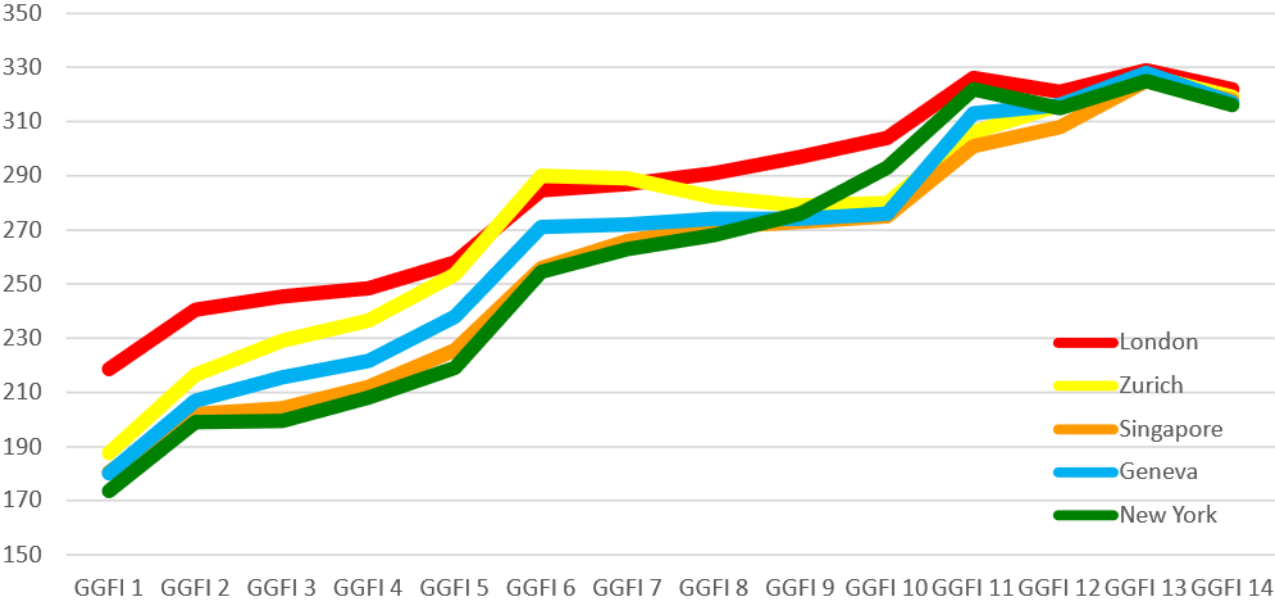
When the depth dimension is examined, Zurich takes the lead among the top five centres, with London and Singapore tied. The leading centres are closely matched with only four rating points separating them on the depth rating.

**Chart 7 | Ratings For The Depth Dimension In The Top Five Centres Over Time**



On the quality measure, the rank order of the top five centres is the same as in the main GGFI index. Only six points separate the top five centres on this measure.

**Chart 8 | Ratings For The Quality Dimension In The Top Five Centres Over Time**



## Leading Financial Centres

It is notable that some leading financial centres perform less well than expected in the GGFI, considering their performance in the [Global Financial Centres Index](#) (GFCI), which has been measuring financial centre competitiveness since 2007.

We can compare the centres which rank in the top 20 in the GFCI with their performance in the GGFI. This shows some disconnection between the highest performing centres in the GFCI and performance on green finance in the GGFI. In total, 12 centres feature in the top 20 in both measures with London, New York, Singapore, and Los Angeles featuring in the top 10 in both indices.

**Table 3 | Leading Financial Centres - Comparison of GGFI And GFCI Rankings**

Centre	Global Green Finance Index 14	Green Finance Depth	Green Finance Quality	Financial Centre Competitiveness
New York	5	8	5	1
London	1	3	1	2
Hong Kong	38	39	39	3
Singapore	3	3	3	4
San Francisco	17	16	18	5
Chicago	15	17	13	6
Los Angeles	7	5	10	7
Shanghai	34	35	33	8
Shenzhen	24	11	36	9
Frankfurt	20	14	24	10
Seoul	21	21	20	11
Washington DC	12	14	11	12
Geneva	4	5	4	13
Dublin	56	54	59	14
Paris	18	21	14	15
Dubai	35	44	22	16
Zurich	2	2	2	17
Beijing	33	28	39	18
Luxembourg	8	9	6	19
Tokyo	42	54	26	20
Source	GGFI 14 Rank	GGFI 14 Depth Rank	GGFI 14 Quality Rank	GFCI 36 Rank

*“Tax policies can drive green investments. For instance, tax credits for renewable energy projects or energy-efficient buildings encourage capital flow into these sectors.”*

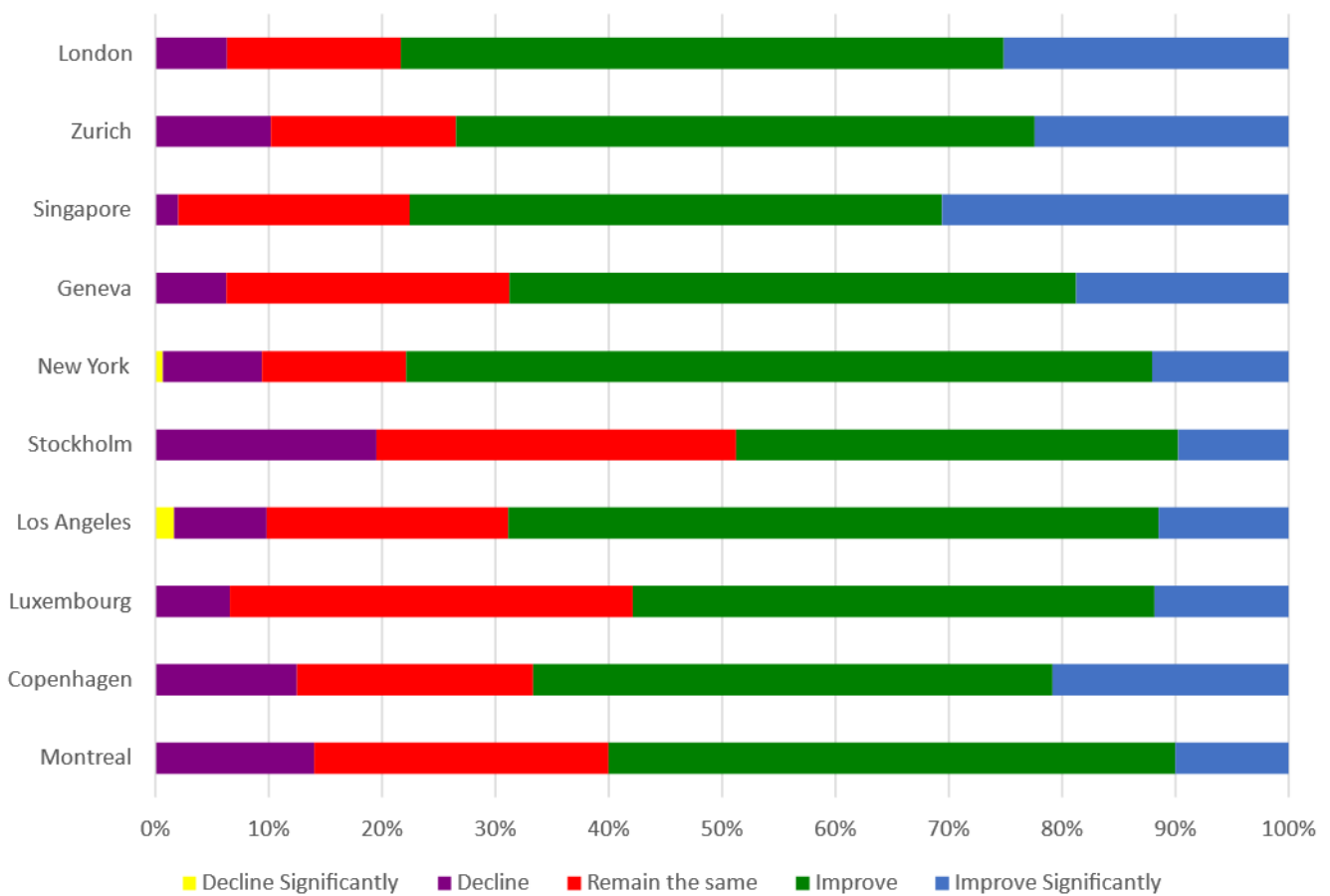
COMPLIANCE ANALYST, POLICY AND PUBLIC FINANCE SECTOR, MAURITIUS

## GGFI 14 Further Analysis

### Expected Change In Centres

We asked respondents whether the centres they rated would improve, decline, or stay the same in relation to their green finance offering over the next two to three years. The results for the top 10 centres are displayed in Chart 9, showing high levels of confidence, with the majority of respondents predicting an improvement by all centres in this group, and with very high levels of confidence in London, Singapore, and New York.

**Chart 9 | Top 10 Centres - Expected Change In Green Finance Offering**



*“Regulatory and policy frameworks are needed that mandate the use of sustainable finance instruments such as taxonomies and disclosure regulations.”*

ADVISOR, SUSTAINABLE FINANCE, POLICY AND PUBLIC FINANCE SECTOR, FRANKFURT



## Instrumental Factors

The GGFI is a factor assessment index, based on a worldwide survey of finance professionals' assessments on the quality and depth of green finance offerings in financial centres. These assessments are run through a statistical model which uses 127 instrumental factors relating to a range of aspects of financial centre competitiveness. These include measures of sustainability, the business environment, infrastructure, and human capital.

Table 4 shows the top 15 instrumental factors' correlation with the GGFI ranking. The closest correlation is with the Urban Mobility Readiness Index, the Safe Cities Index, and the Global Financial Centres Index.

**Table 4 | Top 15 Instrumental Factors By R-Squared Correlation**

Instrumental Factor	R-Squared
Urban Mobility Readiness Index	0.707
Safe Cities Index	0.649
The Global Financial Centres Index	0.625
IESE Cities In Motion Index	0.612
Global Innovation Index	0.608
International IP Index	0.559
Adjusted Net National Income Per Capita	0.555
Legatum Prosperity Index	0.546
Cost Of Living City Rankings	0.531
Quality Of Living City Rankings	0.525
Logistics Performance Index	0.524
Travel & Tourism Development Index	0.520
Sustainable Economic Development	0.502
Energy Transition Index	0.501
Government Effectiveness	0.493

*“To bring green finance into the mainstream, finance professionals need to have the relevant knowledge, skills and attitudes to accurately assess climate and nature-related risk and opportunities.”*

RESEARCHER, KNOWLEDGE SECTOR, LONDON

Focusing only on the instrumental factors which relate to sustainability, the factors most closely correlated in terms of their R-Squared relationship with the GGFI rankings are set out in Table 5. The leading factors continue to focus on cities as sustainable places and on the development of the green economy.

**Table 5 | Top 15 Sustainability Instrumental Factors By R-Squared Correlation**

Sustainability Factors	R-Squared
Urban Mobility Readiness Index	0.707
IESE Cities In Motion Index	0.612
Quality Of Living City Rankings	0.525
Sustainable Economic Development	0.502
Energy Transition Index	0.501
World Energy Trilemma Index	0.463
Sustainable Cities Index	0.456
The Green Future Index	0.455
Global Sustainable Competitiveness Index	0.359
The Global Green Economy Index	0.337
Environmental Performance Index	0.323
Quality Of Life Index	0.220
Pollution Index	0.208
Global Green Growth Index	0.207
Proportion Of Population Using Safely-managed Drinking-Water Services (%)	0.206



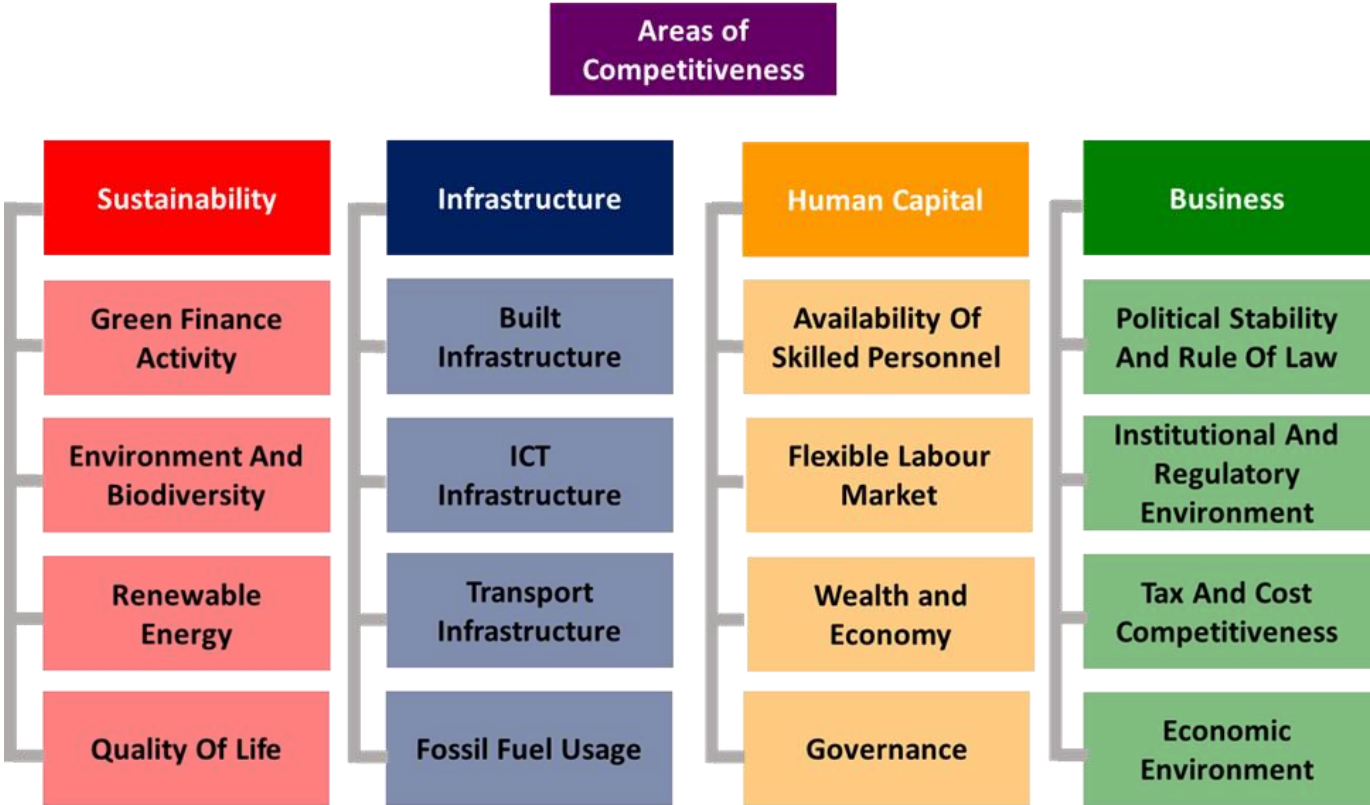
# Areas Of Competitiveness

The instrumental factors used in the GGFI model are grouped into four broad areas:

- Sustainability
- Infrastructure
- Human Capital
- Business

These areas, and the instrumental factor themes which comprise each area, are shown in Chart 10.

Chart 10 | GGFI Areas Of Competitiveness



To assess how financial centres' green finance offerings perform against each of these areas, the GGFI statistical model is run for each area of competitiveness separately, allowing a picture to be built of centres' strengths and weaknesses. The performance of the top ranked 15 centres in each of these areas is illustrated in table 6.

The leading centres in the GGFI have strengths across all four areas of competitiveness. Some centres are strong in a particular area, for example, Luxembourg in Human Capital or Singapore in the sustainability measures.

**Table 6 | Top 15 Centres By Area Of Competitiveness**

Rank	Sustainability	Business	Human Capital	Infrastructure
1	London	Zurich	Zurich	London
2	New York	London	London	New York
3	Singapore	New York	New York	Singapore
4	Zurich	Singapore	Geneva	Zurich
5	Luxembourg	Stockholm	Singapore	Geneva
6	Montreal	Geneva	Oslo	Stockholm
7	Washington DC	Copenhagen	Luxembourg	Luxembourg
8	Oslo	Washington DC	Copenhagen	San Francisco
9	San Francisco	Oslo	Montreal	Washington DC
10	Geneva	Lugano	Washington DC	Paris
11	Los Angeles	Luxembourg	Stockholm	Frankfurt
12	San Diego	Los Angeles	Vancouver	Los Angeles
13	Toronto	Toronto	Los Angeles	Lugano
14	Frankfurt	Frankfurt	Paris	Toronto
15	Seoul	Montreal	Amsterdam	San Diego

## Index Ranking For Sustainability

We can compare the overall index ranking with the ranking based on the sustainability area of competitiveness, using only the instrumental factors that have a direct relationship to sustainability. This analysis produces slightly different results to the main index, as shown in the comparison in Table 7. The plus and minus figures show the difference between the main index and the index calculated using only sustainability factors.

Where only sustainability factors are included in the analysis, London and Singapore retain their positions. New York, Montreal, Washington DC, San Francisco, Frankfurt, and Seoul gain four or more places, while Stockholm, Copenhagen, Lugano, and Chicago drop out of the top 15.

**Table 7 | Top 15 Centres Using All Factors And Only Sustainability Factors**

Rank	All Factors	Sustainability Factors
1	London	London
2	Zurich	New York (+4)
3	Singapore	Singapore
4	Geneva	Zurich (-2)
5	New York	Luxembourg (+3)
6	Stockholm	Montreal (+4)
7	Los Angeles	Washington DC (+5)
8	Luxembourg	Oslo (+3)
9	Copenhagen	San Francisco (+8)
10	Montreal	Geneva (-6)
11	Oslo	Los Angeles (-4)
12	Washington DC	San Diego (+2)
13	Lugano	Toronto (+3)
14	San Diego	Frankfurt (+6)
15	Chicago	Seoul (+6)

*“Financial centres where governments actively support green finance through initiatives like green bonds, grants for green technologies, and public-private partnerships tend to see quicker adoption and expansion. Examples include China’s Green Bond Endorsed Project Catalogue and Canada’s Clean Growth Hub.”*

HEAD OF COMMUNICATIONS, BANKING SECTOR, MAURITIUS

## Commentary On Factors

The GGFI survey asks respondents to comment on factors that affect the uptake of green finance, and in particular on regulation, taxation, and the availability of skills. The responses are summarised in Table 8.

**Table 8 | Commentary On Areas Of Competitiveness**

Area Of Competitiveness	Number Of Mentions	Main Themes
Regulatory Environment	89	<ul style="list-style-type: none"> <li>Regulation needs to be complemented by public policy drivers and incentives.</li> <li>Increasing harmonisation of standards between jurisdictions is needed.</li> <li>Mandatory disclosure and the continuing development of taxonomies will drive in the right direction.</li> </ul>
The Availability Of Skills In Green Finance	76	<ul style="list-style-type: none"> <li>There is a lack of people with the appropriate skill set at present.</li> <li>There is a need to expand specialist training and certification programmes.</li> <li>Basic knowledge of sustainability and green finance has improved, but the skills of applying that knowledge to finance are still developing.</li> </ul>
Taxation	78	<ul style="list-style-type: none"> <li>There is considerable support for some form of carbon taxation or carbon pricing to allow market solutions to work.</li> <li>Tax credits for renewable energy projects or energy-efficient buildings encourage capital flow into these sectors.</li> </ul>
Other	21	<ul style="list-style-type: none"> <li>Adaptation finance is very important, particularly for the Global South.</li> <li>There has to be action on incentives and alignment with sustainability targets, through remuneration policy, interest rate policy, and the development of new financial instruments.</li> </ul>

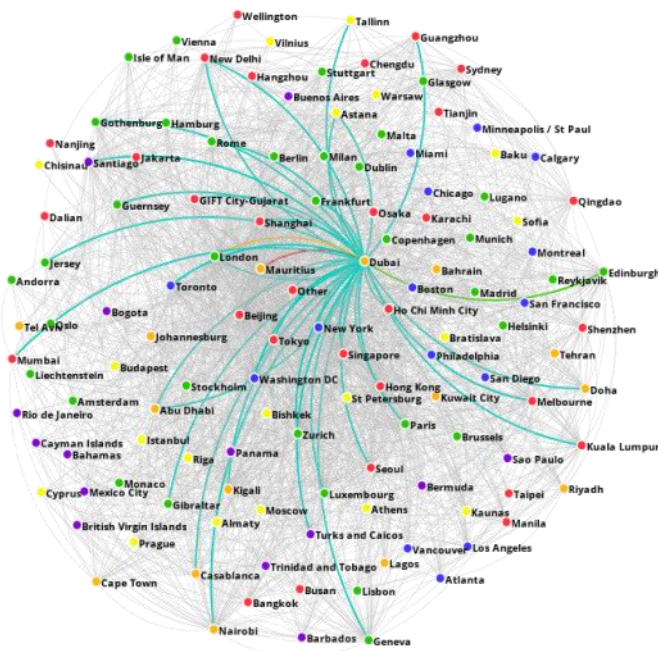
We also asked respondents to identify interesting initiatives in green finance. These included:

- Green and sustainable finance taxonomies.
- Cim Financial Services Ltd green bond issuance to finance electric, hybrid and plug-in-hybrid vehicles.
- Developing the Smart Agrivoltaic Rooftop Greenhouse.
- Green bonds where coupon varies with achievement or not of targets (sustainability-linked bonds).
- Green Fintech.
- Scale up funds for SMEs with a sustainability focus.

# Connectivity

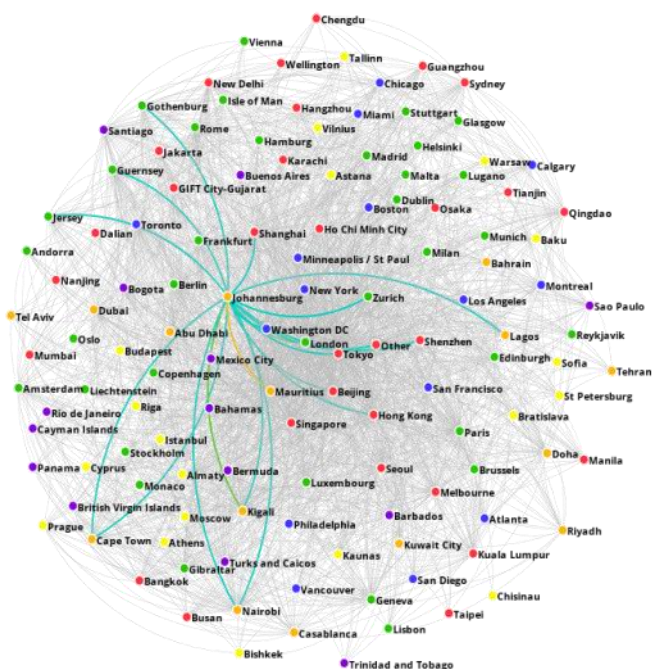
One factor where financial centres’ green finance performance differs is the extent to which centres are connected to other financial centres. One way of measuring this connectivity is to look at the number of assessments given to and received from other centres in the GGFI survey. Charts 11 and 12 use Dubai and Johannesburg as examples to contrast the different levels of connectivity that the two centres enjoy. In this example, while both cities are well-connected, Dubai has a wider spread of connections across all regions of the world, including better connections with major financial centres.

**Chart 11 | GGFI 14 Connectivity - Dubai**



- 1-5 ratings
- 6-10 ratings
- 11-15 ratings
- 16-20 ratings
- 21+ ratings

**Chart 12 | GGFI 14 Connectivity - Johannesburg**



- Asia/Pacific
- North America
- Western Europe
- Middle East & Africa
- Latin America & the Caribbean
- Eastern Europe & Central Asia

## Financial Centre Profiles

We conduct further analyses based on three measures (axes) that determine a financial centre's profile in relation to three different dimensions.

**'Connectivity'** – the extent to which a centre is well known among GGFI survey respondents, based on the number of 'inbound' assessment locations (the number of locations from which a particular centre receives assessments) and 'outbound' assessment locations (the number of other centres assessed by respondents from a particular centre).

**'Diversity'** – the instrumental factors used in the GGFI model give an indication of a broad range of factors that influence the richness and evenness of factors that characterise any particular financial centre.

We consider this span of factors to be measurable in a similar way to that of the natural environment. We therefore use a combination of biodiversity indices (calculated on the instrumental factors) to assess a centre's diversity. This takes account of the range of factors against which the centre has been assessed – the 'richness' of the centre's business environment; and the 'evenness' of the distribution of that centre's scores. A high score means that a centre is well diversified; a low diversity score reflects a less rich business environment.

**'Speciality'** – the depth within a financial centre of green finance and sustainability. A centre's 'speciality' or performance is calculated from the difference between the overall GGFI rating and the ratings when the model is calculated based only on sustainability factors.

In Table 9, 'Diversity' (Breadth) and 'Speciality' (Depth) are combined on one axis to create a two-dimensional table of financial centre profiles. The 97 centres in GGFI 14 are assigned a profile on the basis of a set of rules for the three measures: how well connected a centre is, how broad its services are, and how specialised it is.

The Global Leaders (in the top left of the table) have both broad and deep green finance activity and are connected with a greater range of other financial centres. Other leading centres are profiled as Established International Centres.

Chart 13 | GGFI Dimensions

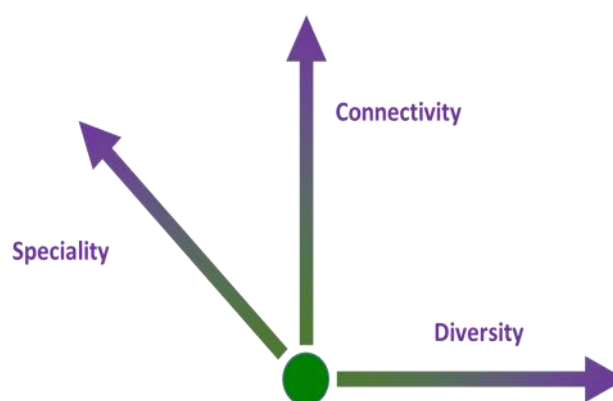


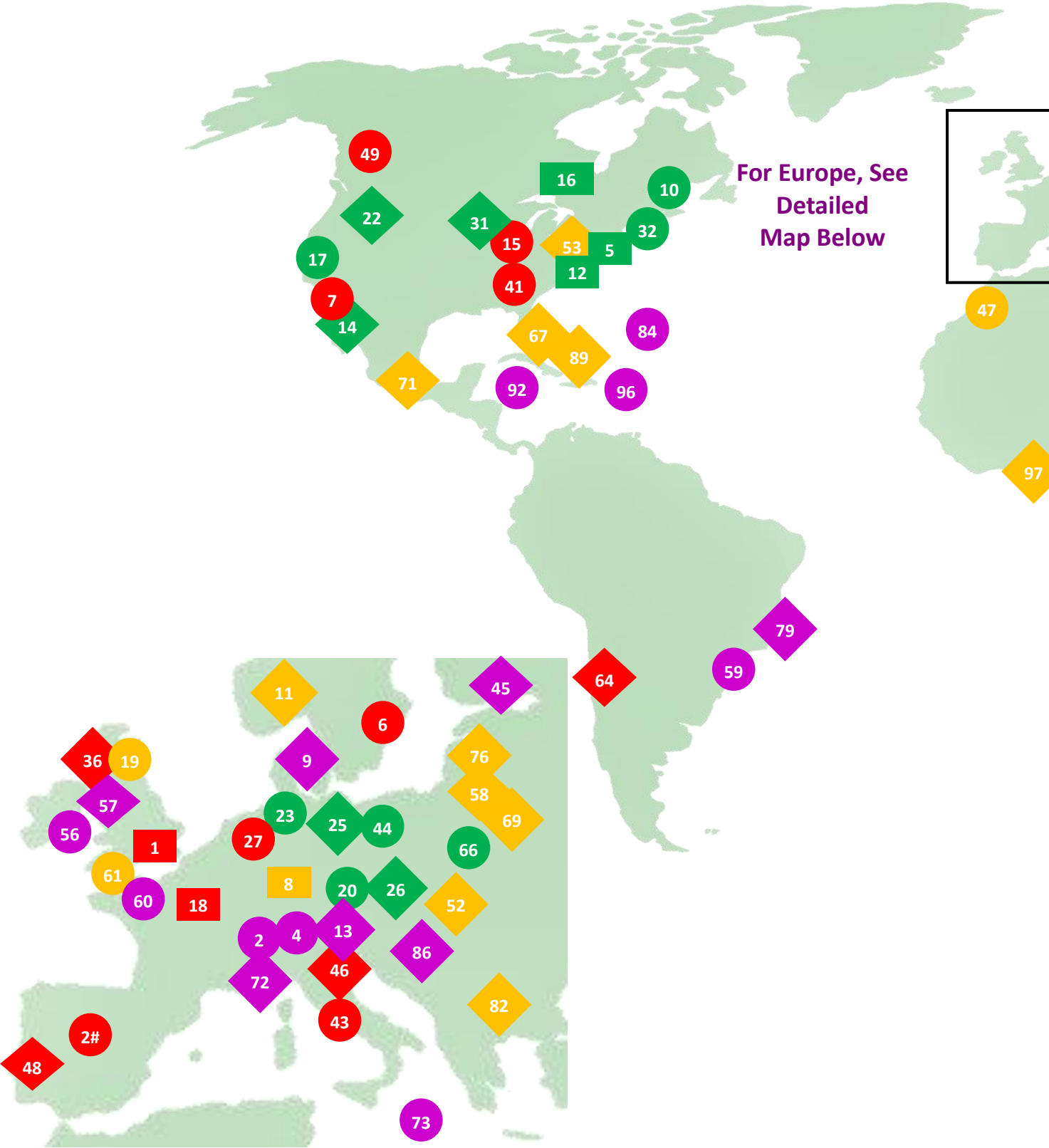


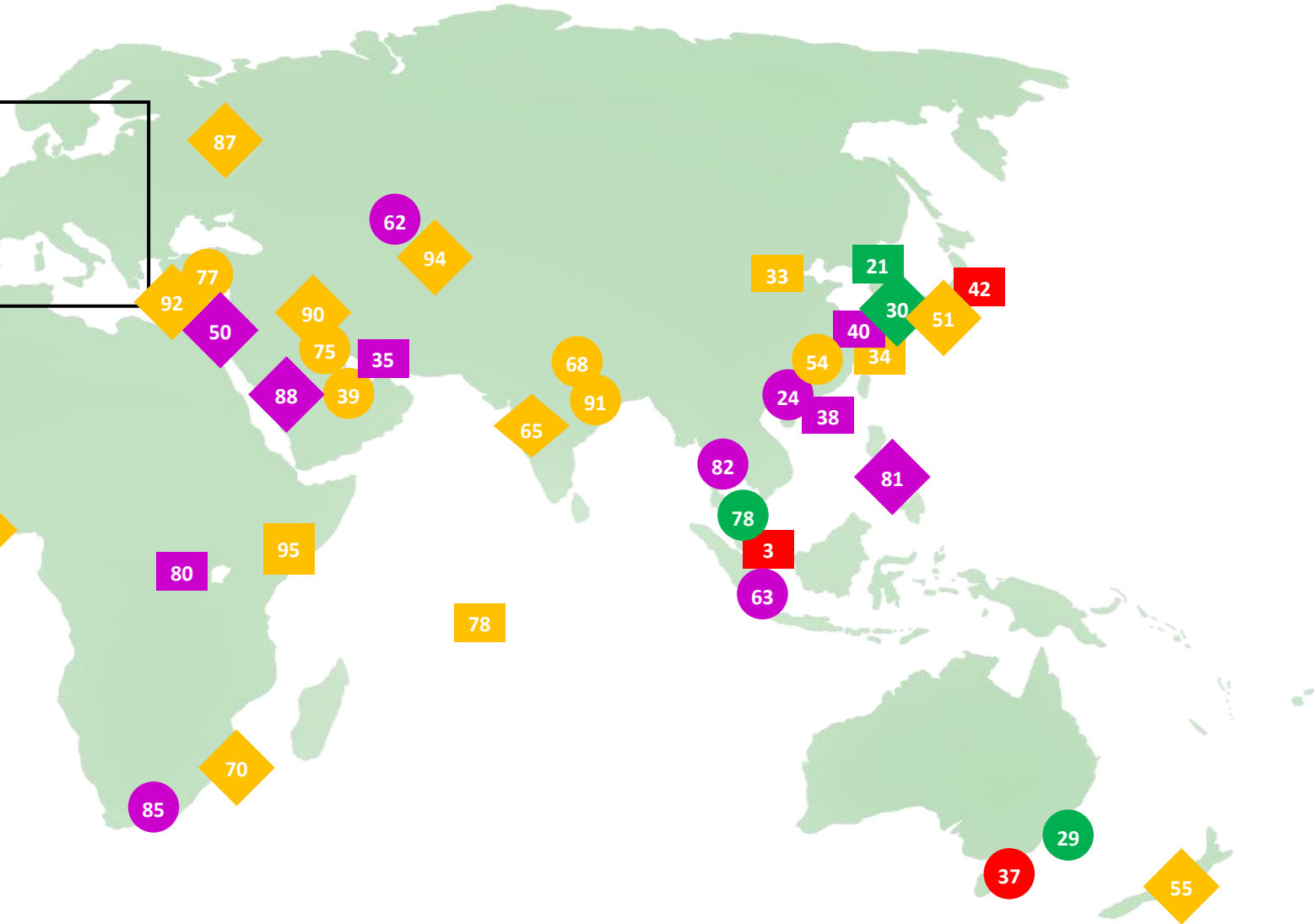
Table 9 | Financial Centre Profiling

	Broad and Deep	Relatively Broad	Relatively Deep	Emerging
	Global Leaders	Global Diversified	Global Specialists	Global Contenders
Global	London	New York*	Dubai*	Luxembourg*
	Zurich*	Washington DC*	Hong Kong*	Beijing
	Singapore*	Toronto*	Qingdao*	Shanghai*
	Paris*	Frankfurt	Kigali*	Mauritius*
	Tokyo*	Seoul*		Nairobi
International	Established International	International Diversified	International Specialists	International Contenders
	Stockholm	Montreal*	Geneva	Edinburgh*
	Los Angeles	San Francisco*	Shenzhen	Abu Dhabi*
	Chicago	Amsterdam	Dublin*	Casablanca
	Brussels*	Sydney*	Sao Paulo*	Guangzhou*
	Madrid	Boston*	Jersey	Guernsey
	Melbourne	Berlin	Astana*	New Delhi*
	Atlanta*	Prague*	Jakarta	Doha*
	Rome*	Kuala Lumpur	Malta	Istanbul*
	Calgary		Bangkok	Mumbai
	Santiago*		Bermuda	Cayman Islands*
			Cape Town	
			British Virgin Islands*	
	Local	Established Players	Local Diversified	Local Specialists
Glasgow		San Diego*	Copenhagen	Oslo*
Milan*		Vancouver	Lugano	Osaka*
Lisbon		Hamburg	Helsinki	Vienna*
		Munich	Tel Aviv*	Philadelphia*
		Busan*	Isle of Man	Wellington*
		Minneapolis / St Paul (New)	Monaco	Kaunas
		Warsaw*	Rio de Janeiro	GIFT City-Gujarat
			Manila*	Miami*
			Liechtenstein	Sofia
			Riyadh*	Johannesburg*
				Mexico City
				Riga*
				Moscow*
				Bahamas*
			Bahrain	
			Cyprus	
			Almaty	
			Lagos	

\* An asterisk denotes a change since GGFI 13

# The GGFI 14 World - Centres In The Index





The numbers on the map indicate the GGFI 14 rankings.

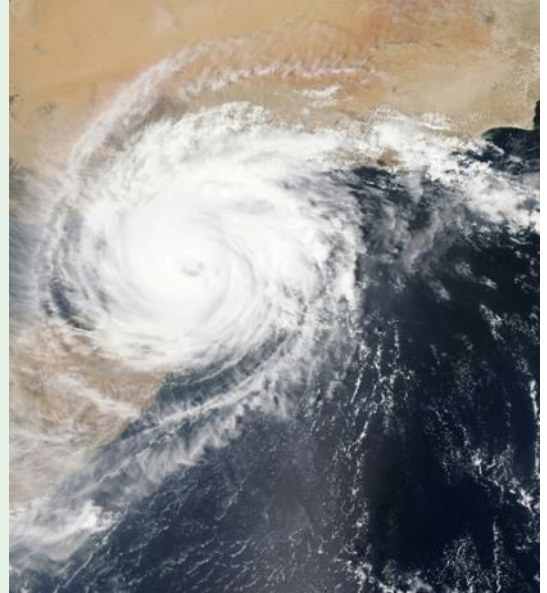
<b>Broad and Deep</b>	<b>Relatively Broad</b>	<b>Relatively Deep</b>	<b>Emerging</b>
<span style="color: red;">■</span> Global Leaders	<span style="color: green;">■</span> Global Diversified	<span style="color: purple;">■</span> Global Specialists	<span style="color: orange;">■</span> Global Contenders
<span style="color: red;">●</span> Established International	<span style="color: green;">●</span> International Diversified	<span style="color: purple;">●</span> International Specialists	<span style="color: orange;">●</span> International Contenders
<span style="color: red;">◆</span> Established Players	<span style="color: green;">◆</span> Local Diversified	<span style="color: purple;">◆</span> Local Specialists	<span style="color: orange;">◆</span> Evolving Centres

# Catastrophes & Insurance – Closing the Gap

## Introduction

The global financial collapse of 2008 saw insurers paying out over £15.4 trillion<sup>1</sup> in claims (more than the GDP of the entirety of the United States). The sheer scale of exposure meant that many insurance providers went bankrupt, and the lasting effects of the event can be seen in higher business insurance premiums and the refusal of many insurance companies to provide cover in the event of another global market collapse.

Climate change is a threat on an even larger scale, albeit one that is playing out in slow motion. According to a 2020 study by McKinsey, climate related losses could reach 4% of global GDP by 2050<sup>2</sup> and will accelerate.



## Losses & Catastrophes

Insurance plays a critical role in the recovery from disasters as most households and small businesses do not have sufficient savings to fund repair and rebuilding on their own.

However, although standard economic models mean that insurers turn a profit in any given year, this does not apply to “risks that cannot be diversified”<sup>3</sup> such as a flood, wildfire, or hurricane.

This type of event could bankrupt an insurance company if it were forced to pay out on every single valid claim across a wide geographical area, so “Acts of God” (events where no single individual or recognised entity is at fault) are usually excluded from standard insurance policies and must be insured separately. However, if an event occurs that results in significant losses across a wide area the insurance industry may declare a “catastrophe”<sup>4</sup>, invalidating standard flood fire or storm cover.

Catastrophes may be declared when an event results in:

- \$25 million or more in insured property losses.
- Ten deaths.
- Fifty people injured.
- 2,000 filed claims or homes and structures damaged.

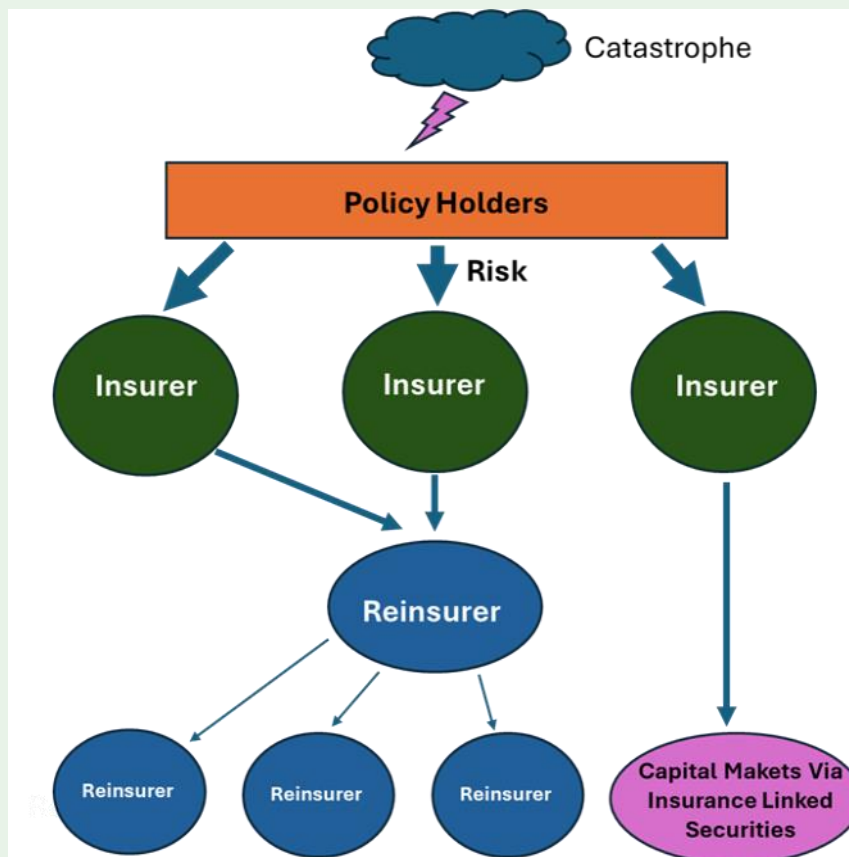
1. Baluch F. et al 2011 Insurance, Systemic Risk and the Financial Crisis The Geneva Papers on Risk and Insurance - Issues and Practice, Volume 36, pages 126–163 <https://link.springer.com/article/10.1057/gpp.2010.40>
2. McKinsey 2020 Climate change and P&C insurance: The threat and opportunity <https://www.mckinsey.com/industries/financial-services/our-insights/climate-change-and-p-and-c-insurance-the-threat-and-opportunity>
3. Rothschild M & Stiglitz J 1976 Equilibrium in competitive insurance markets: An essay on the economics of imperfect information. The Quarterly Journal of Economics 90 (4), 629-649. <https://www.uh.edu/~bsorense/Rothschild&Stiglitz.pdf>
4. Insurance Information Institute (accessed 07.10.24) Insurance Handbook - Facts + Statistics: U.S. catastrophes <https://www.iii.org/publications/insurance-handbook/insurance-and-disasters/facts-statistics-us-catastrophes>

As a result, customers seeking cover for disasters, must turn to catastrophe insurance to protect homes, businesses, and infrastructure from natural disasters such as floods and earthquakes, and human-made disasters, such as large-scale riot, cyber, or terrorist attacks.

### Managing Risks

Insurers provide catastrophe cover by using reinsurance and other financial instruments to spread risk and cover the costs of catastrophic events.

**Figure 1 | Transferring Risk**



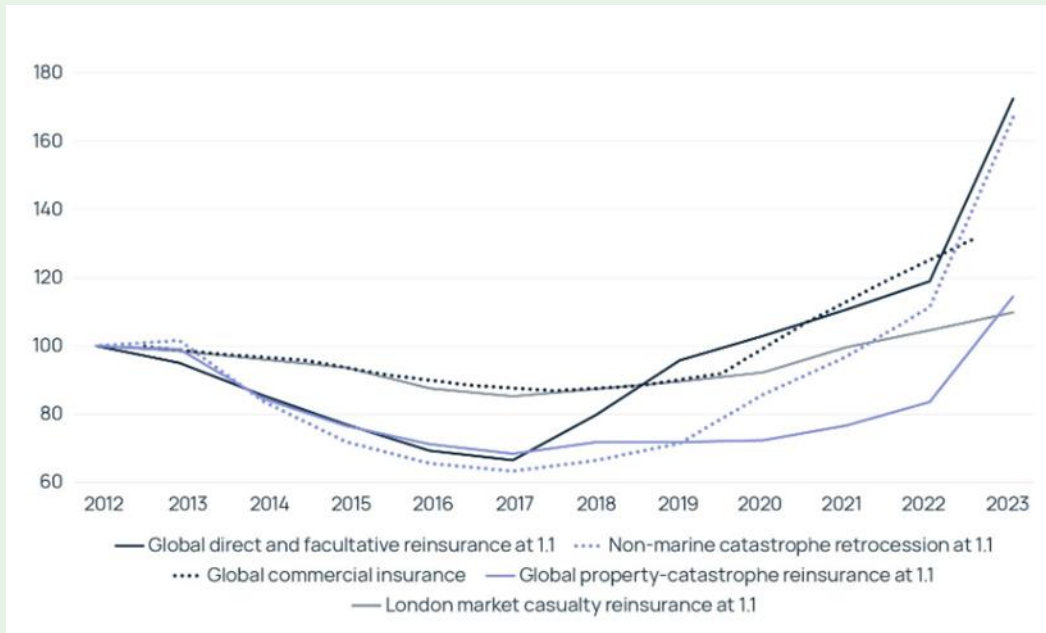
### Reinsurance

Reinsurance is sometimes referred to as insurance for insurance companies, it works by the insurer (the cedent) transferring some (or all) of its insured risk to a reinsurance company in exchange for a proportion of the policy premiums. The reinsurer can then transfer all or part of this risk to another reinsurer. This is known as retrocession, and it serves to reduce the reinsurers exposure to potential losses and create a more balanced portfolio of risks.

Insurers can specifically purchase catastrophe excess reinsurance to reduce their exposure to large-scale natural or human induced events. Catastrophe excess reinsurance covers a percentage of claims above a defined threshold. However, reinsurance is expensive, and historically, catastrophes were rare events meaning that cedents had to carefully weigh the business implications of reinsuring.

As the scale of catastrophe related losses increases, due to accelerating anthropomorphic climate change, expanding urban development in coastal areas, and economic development, demand for reinsurance is increasing and costs continue to rise (see figure 2). As a result, some customers in high-risk areas may find it almost impossible to obtain affordable coverage<sup>5</sup>. In 2023, State Farm, the largest home insurer in the United States announced that it would not accept new applications for homeowners' policies in wildfire-ravaged California<sup>6</sup>.

**Figure 2 | Howden Pricing Index For Primary, Reinsurance And Retrocession Markets – 2012 To 2023**



Source: Howden Insurance

## Catastrophe (CAT) Bonds

One alternative approach to managing risk is the use of catastrophe bonds. CAT bonds are a subset of insurance-linked securities (ILS) that transfer a specified set of risks from the issuer to investors. They were created and first used in the mid-1990s<sup>7</sup> in the aftermath of Hurricane Andrew an extremely destructive tropical cyclone that struck the Bahamas, Florida, and Louisiana in 1992.

Andrew caused \$27 billion in damages, of which \$15.5 billion was covered by insurance. The resultant claims led to the failure of eight insurance companies and many others to the brink of insolvency<sup>8</sup>. The demand for natural-disaster-related insurance in the affected areas required capital to flow into reinsurance. CAT Bonds gave insurers access to market finance by offering institutional investors the opportunity to earn a return on investment, uncorrelated to other financial market instruments, in exchange for assuming catastrophe insurance risks.

5. Howden 2023 The Great Realignment <https://www.howdengroup.com/sites/corporate.howdenprod.com/files/2023-01/the-great-realignment-report-2023.pdf>

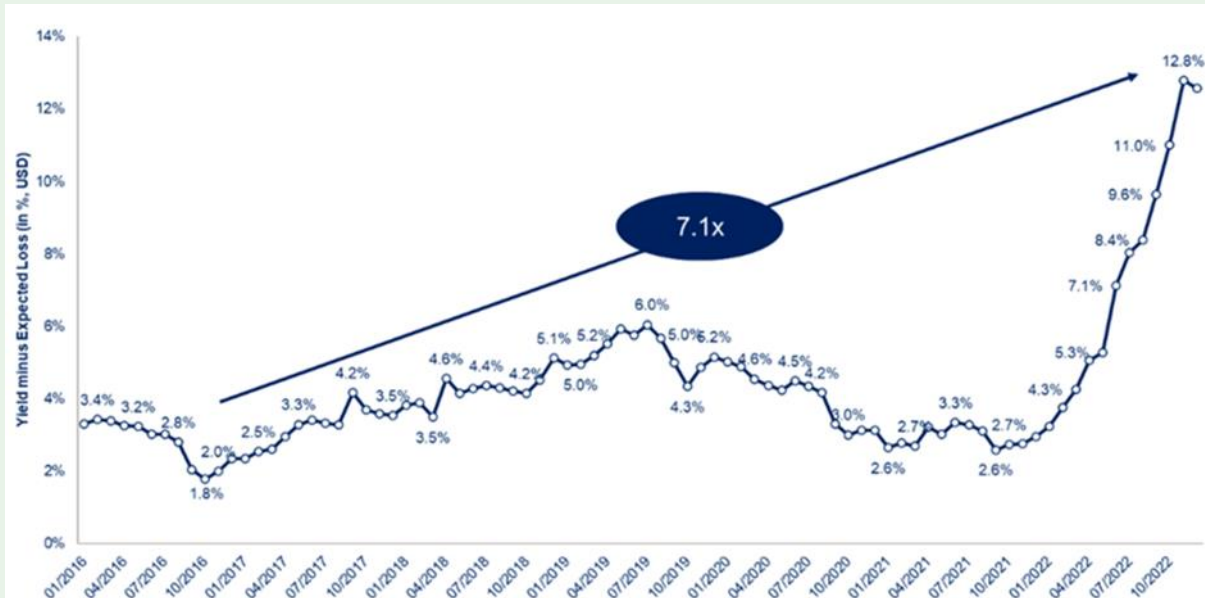
6. State Farm General Insurance Company (accessed 9.10.24) California New Business Update <https://newsroom.statefarm.com/state-farm-general-insurance-company-california-new-business-update/>

7. Polacek A 2018 Catastrophe Bonds: A Primer and Retrospective. Chicago Fed Letter, No. 405, 2018 <https://www.chicagofed.org/publications/chicago-fed-letter/2018/405>

8. Insurance Information Institute 2012 Hurricane Andrew And Insurance: The Enduring Impact Of An Historic Storm [https://www.iii.org/sites/default/files/paper\\_HurricaneAndrew\\_final.pdf](https://www.iii.org/sites/default/files/paper_HurricaneAndrew_final.pdf)

These insurance-linked securities (ILS) allow insurers (or Governments) to transfer risk to investors, as the issuer only receives payment if a catastrophe occurs. However, a succession of disastrous years, punctuated by storms, floods, wildfires and wars, have resulted in a highly volatile market for these ILS products. which has sharply increased yields (see figure 3). As a result, they have become significantly more expensive for issuers.

**Figure 3 | Catastrophe Bond Yields Have Increased Sevenfold**



Source: Artemis<sup>9</sup>

## Pool Re

The Pool Reinsurance Company Limited, known as Pool Re, was set up in the wake of the IRA bombing of the Baltic Exchange in 1992. The bomb, the largest detonated in England since the second world war, killed three people and caused £800 million worth of damage<sup>10</sup> (equivalent to £2.09 billion in 2023).

In 1993, the insurance industry in cooperation with the UK Government established Pool Re, a mutual reinsurer whose members comprise major insurers and Lloyd's Syndicates who offer commercial property insurance in the UK. The scheme (the first public/private partnership to cover insured losses) is owned by its members but is underpinned by a HM Treasury commitment to support Pool Re if it cannot fund a legitimate claim arising from an act of terrorism<sup>11</sup>. Pool Re pays a premium to the Government for this backstop, and would repay any Treasury funds required, by instalment.

9. Twelve Capital (accessed 9.10.24) Risk adjusted cat bond yields seven times higher than 2016 <https://www.artemis.bm/news/risk-adjusted-cat-bond-yields-seven-times-higher-than-2016-twelve-capital/>

10. MacLeod A 1993 IRA's City of London Bomb Aimed for Financial Impact <https://www.csmonitor.com/1993/0427/27082.html>

11. Pool Re (accessed 10.0.24) Who we are <https://www.poolre.co.uk/who-we-are/>

## Flood Re

In the UK, residential flood insurance is voluntary and bundled into home and buildings insurance. It is underwritten solely by the private insurance market with no direct government involvement and as such differs notably<sup>12</sup> from countries such as the US, and many European nations where the state is either direct insurance provider or regulates the industry to ensure that there is coverage<sup>13</sup>.

The UK ensures industry coverage of flood risk through the Flood Re scheme. This is a joint industry and government initiative which aims provides reinsurance to cedents who provide flood cover to homes in the UK. The scheme was established by the Water Act 2014<sup>14</sup> and is mandatory for all insurers offering flood protection to homes. Flood re is funded through an insurance industry levy and uses Council Tax Bands to price its reinsurance premiums. This enables Flood Re to offer primary insurers cheaper reinsurance rates for high-risk properties than they could find with reinsurers basing their premiums on risk, enabling them to charge lower premiums to homeowners. The Flood Re scheme aims to:

- a. promote affordability and availability of insurance for UK households at high flood risk; and
- b. manage the transition to risk-reflective pricing of flood insurance for household premises.

The Flood Re scheme is scheduled to end in 2039.

Flood re is believed to be effective in its primary aim<sup>15</sup>, however, the scheme does have a number of failings:

- Flood Re's strict eligibility rules mean that significant parts of the flood insurance market miss out on support.
- Despite the purported link between the scheme and wider planning laws, many homes continue to be built on floodplains and are excluded from the scheme. The Department for Environment, Food & Rural Affairs (Defra) states that any such development should have appropriate resilience measures in place, so the cost of cover should be lower.
- The focus on the domestic market excludes commercial properties and small businesses. The Government says that the commercial market is much more diverse and that there is little evidence that businesses have difficulty finding cover.
- Blocks of more than three flats are also excluded from buildings cover. The logic is that they are often run by private management companies, and eligible for landlord insurance. But the British Insurance Brokers' Association has argued that this unreasonably excludes up to a million householders.

12. Hampton S & Curtis J 2022 A bridge over troubled water? Flood insurance and the governance of climate change adaptation *Geoforum* 136 (2022) 80–91 <https://doi.org/10.1016/j.geoforum.2022.08.008>

13. Atreya et al., 2015 A comparison of residential flood insurance markets in 25 countries. Wharton Risk Management and Decision Processes Center, University of Pennsylvania, Philadelphia. <https://zcralliance.org/resources/item/a-comparison-of-residential-flood-insurance-markets-in-25-countries/>

14. HMG 2024 Flood Re annual report and accounts 2023 to 2024 Ref: ISBN 978-1-5286-4984-1, HC 192 <https://www.gov.uk/government/publications/flood-re-annual-report-and-accounts-2023-to-2024>

15. HMG 2023 Flood Re annual report and accounts 2022 to 2023 Ref: ISBN 978-1-5286-4217-0, HC 1414 2023 <https://www.gov.uk/government/publications/flood-re-annual-report-and-accounts-2022-to-2023>



## Cyber Re

Cyber-crime is becoming a significant issue to businesses and public institutions world-wide (see figure 4). In an increasingly networked society, the loss of critical services can result in significant claims.

Cyber Re is a proposal for an insurance market mechanism focussed on cyber-crime<sup>16</sup>. The proposals bear elements of similarity to both Pool re and Flood re and aim to protect insurers from extreme losses whilst ensuring that premiums remain affordable. Insurers would participate voluntarily and be funded via a cyber premium-driven reinsurance contribution. The scheme, which has the backing of a number of major insurance and reinsurance companies would aim to:

- Facilitate reinsurance.
- Transfer risk mechanisms.
- Provide regulators with assurance that cyber insurance can be safely underwritten.
- Encourage members to share information and reduce risk.
- Help members assess their exposure and plan risk reduction programs.
- Share best practices.
- Grow the market.

**Figure 4 | Worldwide Losses From Cyber Crime 2019-2023<sup>17</sup>**



Source: Statista

## Troubled Waters

Major macroeconomic shocks in the wake of Covid 19, geopolitical realignments, such as the invasion of Ukraine and on-going conflict in the middle east (both of which continue to have an impact on energy prices), and natural catastrophes which are accelerating in scale and severity<sup>18</sup>, have introduced significant uncertainty and volatility into the insurance and reinsurance markets.

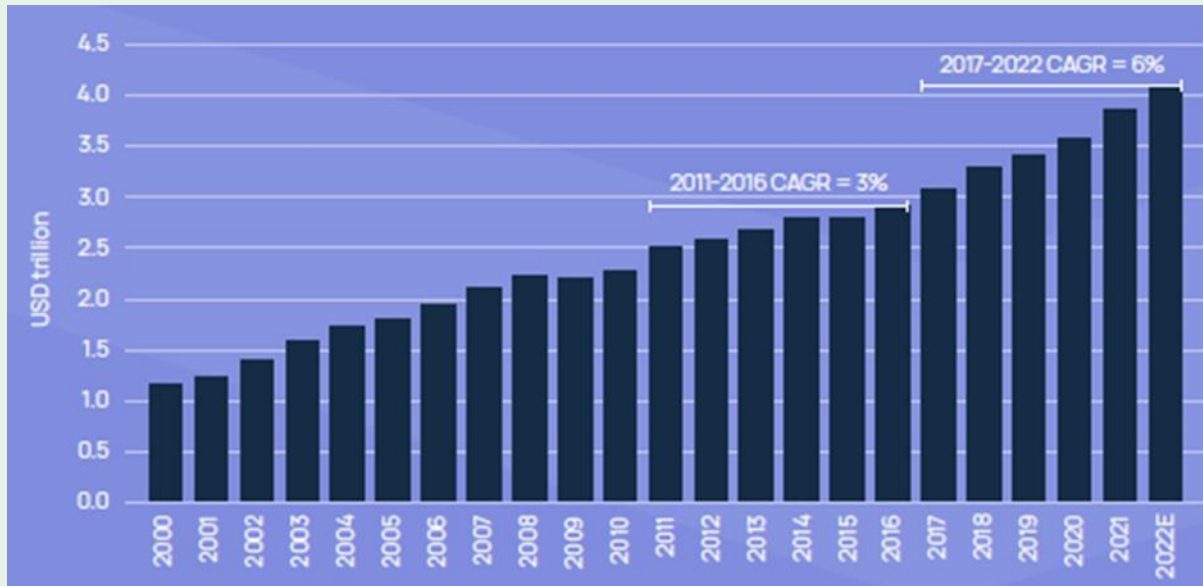
16. Z/Yen (accessed 11.10.24) Cyber Re - A Reinsurance Proposal For UK National ICT Infrastructure Security & Competitiveness <https://www.zyen.com/research/research/cyber-re-a-reinsurance-proposal-for-uk-national-ict-infrastructure-security-competitiveness/>

17. Statista (accessed 11.10.24) How Much Money Is Lost to Cybercrime? <https://www.statista.com/chart/32341/worldwide-reported-losses-connected-to-cybercrime/#:~:text=According%20to%20the%20Bureau's%20analysis,compared%20to%20four%20years%20prior>

18. NOAA 2024 NOAA predicts above-normal 2024 Atlantic hurricane season (May 2024) <https://www.noaa.gov/news-release/noaa-predicts-above-normal-2024-atlantic-hurricane-season>

Insurers have faced significant losses and reinsurers' balance sheets have been adversely affected by a tightening fiscal cycle and higher financing costs. The result has been a consistent rise in insurance premiums for both domestic and commercial customers (see figure 5).

**Figure 5 | Global Non-Life Insurance Premium – 2000 To 2022E**



Source: Howden Insurance

As the price of insurance continues to rise, customers may buy less protection, especially in the light of rising energy and food costs. In 2023, the estimated economic loss due to natural disasters worldwide was \$380 billion, while estimated insured losses were \$118 billion, leaving a global protection gap of \$262 billion<sup>19</sup>.

### Closing the Gap

This insurance gap gives cause for concern in the light of the increasing frequency and severity of natural and man-made disasters. Studies show that catastrophe insurance may considerably shorten the recovery time in communities affected by disaster as it provides much quicker payments to the owners of insured properties compared to government assistance<sup>20</sup>. A number of tools and products are available to Governments and communities to close this insurance gap. These include:

#### Parametric Insurance

Whereas standard indemnity insurance compensates an insured party for losses or damages up to a specified limit (with claims adjustment ensuring that compensation approximates experienced losses),

19. Statista (accessed 11.10.24) Cost of natural disaster losses worldwide from 2000 to 2023 <https://www.statista.com/statistics/612561/natural-disaster-losses-cost-worldwide-by-type-of-loss/#:~:text=In%202023%2C%20there%20was%20a,to%20118%20billion%20U.S.%20dollars>.

20. Zhao J et al 2020 Effect of catastrophe insurance on disaster-impacted community: Quantitative framework and case studies International Journal of Disaster Risk Reduction Volume 43, February 2020 <https://www.sciencedirect.com/science/article/abs/pii/S2212420919309380>

parametric insurance policies pay a defined amount as a function of the characteristics (parameters) of an event independently from the actual sustained loss<sup>21</sup>. For example, parametric insurance can be set to pay a defined sum (or a sum on a sliding scale) in the event of an earthquake which exceeds level 5 on the Richter scale, with higher payouts for earthquakes exceeding level 6 or 7.

The advantage of parametric insurance is that, in the event of an event which triggers the policy, payment is rapid and does not need claims adjustment. Disputes are minimised as the data to trigger a policy is supplied by a trusted third party such as the meteorological or geological office, or a remote sensing organisation such as NASA. The result is that Governments or local administrators with parametric insurance can immediately begin recovery efforts and supply aid to affected individuals. Parametric insurance may benefit from the application of blockchain enabled smart contracts, which can remove administration costs by triggering payments automatically in the event of a catastrophe.

### Community Based Catastrophe Insurance

Community based catastrophe insurance (CBCI) can be provided by a community organisation, or public entity that has the authority to secure or facilitate insurance coverage on behalf of multiple properties. By securing coverage for a group of properties- either domestic or commercial, CBCI has the potential to help close the disaster protection gap, improving financial recovery for communities<sup>22</sup>.

CBCI can:

- Enhance the financial resilience of communities by reducing contingent disaster liabilities, enhancing credit risk profiles, and speeding post disaster recovery.
- Provide affordable and reliable available disaster insurance cover by increasing buying power and securing volume discounts, as well as enhancing data provision for risk analysis.
- Create incentives for community-level and individual risk reduction by capturing premium discounts for community-scale and household mitigation efforts and supporting the financing of risk reduction activity via premium surcharges.
- Community based insurance can be funded via taxes or surcharges and supplied using a group policy, parametric catastrophe insurance or via the establishment of captive insurance vehicles.

### Catastrophe Bonds

Governments often choose to assist citizens in the aftermath of a disaster through disaster aid programmes. Such programmes can come at considerable cost to the public purse, diverting funds meant for education, health, or economic development. However, these programmes could be (fully or partially) financed through risk transfer. For instance, rather than covering risk through standard insurance products, local or national Governments could choose to purchase a catastrophe bond that triggers when a certain magnitude disaster affects their location. The funds received from such a bond could be used to cover any immediate needs of the community, including providing relief to victims.

21. Schupp J 2021 The Regulatory Environment for Parametric Insurance [https://jason-schupp.medium.com/the-regulatory-environment-for-parametric-insurance-38e4dc5cedb9#\\_ftnref46](https://jason-schupp.medium.com/the-regulatory-environment-for-parametric-insurance-38e4dc5cedb9#_ftnref46)

22. Bernhardt A et al 2021 Community-Based Catastrophe Insurance A model for closing the disaster protection gap <https://www.marshmcclennan.com/insights/publications/2021/february/community-based-catastrophe-insurance.html>

## Climate Re

In the 1960s a number of member countries of the OECD Nuclear Energy Agency agreed the Paris Convention and the Brussels Supplementary Convention to share the liability costs in case of a nuclear incident. There was recognition that the scope, scale, and severity of a nuclear incident<sup>23</sup> was beyond the scope of a single government, or insurer to adequately cover.

Global warming, and the increased chances of extreme weather events, present similar risks. Developing economies, particularly those in equatorial regions, are especially vulnerable to the impacts of climate change, which can destroy infrastructure, disrupt economic capacity, and lead to social instability<sup>24</sup>.

Around the world, coping with the impacts of climate change will require balancing adaptation with insurance against extreme risk. A country's resilience to catastrophes comes down to the public sector's ability to pay for relief to the affected population as well as supporting the reconstruction of lost assets and infrastructure. Insuring these risks can help with this, however, as discussed in preceding sections catastrophe coverage is becoming increasingly expensive.

The principles of reinsurance could be applied in the design of a global climate risk pool. In terms of incentives for minimisation of risk this could be addressed in three ways:

- The insured country should bear a minimum cost (up to \$1 billion) to provide an incentive for climate adaptation (for example, a moratorium on building in high-risk areas such as vulnerable coastlines and reform of building codes with respect to infrastructure).
- The premium could be related to a country's carbon footprint to provide an incentive for climate mitigation and low carbon development.
- The insurance could be parametric to focus on extreme events – rainfall, heat, or wind speeds over a certain threshold.

Funding for the scheme could be raised, either through a global insurance levy, or by donations from developed countries and cover could be created through existing commercial markets.



23. Goodhart C & Shoenmaker D 2006 Burden sharing in a banking crisis in Europe LSE Financial Markets Group Special Paper Series, March 2006 [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=888462](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=888462)

24. Adom P 2024 The socioeconomic impact of climate change in developing countries over the next decades: A literature survey Heliyon Volume 10 Issue 15, 15 August 2024, <https://www.sciencedirect.com/science/article/pii/S2405844024111656>

## Conclusions

*“No plane would fly, no ship would sail,  
no house be built without insurance”*  
**Senior insurance professional, in conversation.**

The world has never been more in need of insurance coverage and solutions for extreme events, and policy makers should be aware of the key role that risk management systems play in ensuring financial and economic stability. All stakeholders have critical parts to play in this.

**Regulators** must monitor the industry to ensure that insurers continue to provide affordable catastrophe insurance.

**Insurers** must mobilise their extensive experience of risk pooling to ensure that risks are adequately researched, and that customers are incentivised to adapt to, and minimise the potential impacts of climate change.

**Financial Centres** must encourage their incumbent businesses to manage climate risks effectively and be aware of new opportunities to expand markets and provide new products that meet the catastrophe coverage needs of a warming planet.

We should recognise that the systemic risks posed by climate change are beyond the capacity of the insurance industry acting alone. As noted at COP 28, collaborative efforts involving both the private and public sector will be necessary to ensure the response of insurance markets is effective and addresses the potential for market failure.



## Regional Analysis

In our analysis of the GGFI data, we look at six regions of the world to explore their financial centres' green finance depth and quality.

Alongside the ranks and ratings of centres, we investigate the average assessments received by regions and centres in more detail.

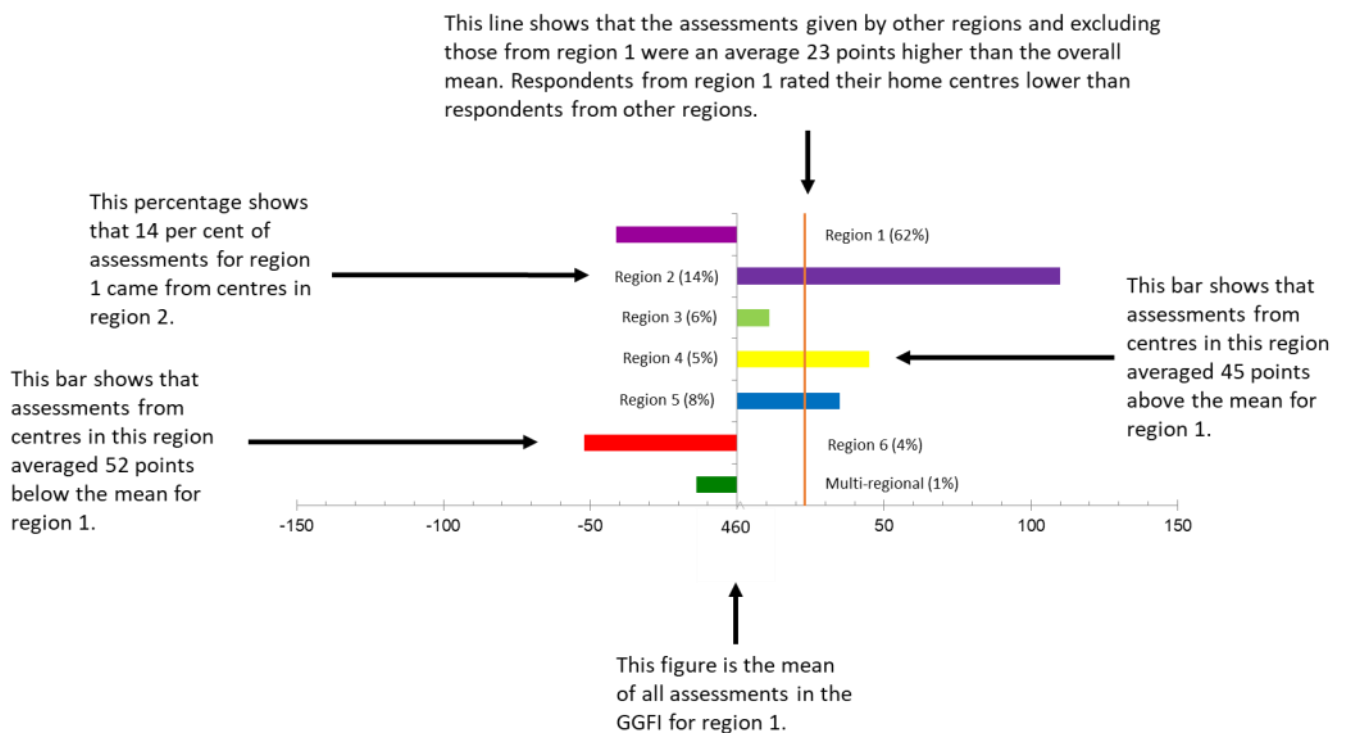
We display this analysis in charts, either for a region or an individual centre. These charts show:

- the mean assessment provided to that region or centre;
- the difference in the mean assessment when home region assessments are removed from the analysis;
- the difference between the mean and the assessments provided by other regional centres; and
- the proportion of assessments provided by each region.

Chart 14 shows an example of this analysis. Coloured bars to the left of the vertical axis indicate that respondents from that region gave lower than average assessments. Bars to the right indicate respondents from that region gave higher than average assessments. Assessments given to a centre by people based in that centre are excluded to remove 'home' bias.

The additional vertical axis (in red) shows the mean of assessments when assessments from the home region are removed. The percentage figure noted by each region indicates the percentage of the total number of assessments that are from that region.

### Chart 14 | Example: Assessments Compared With The Mean For A Region



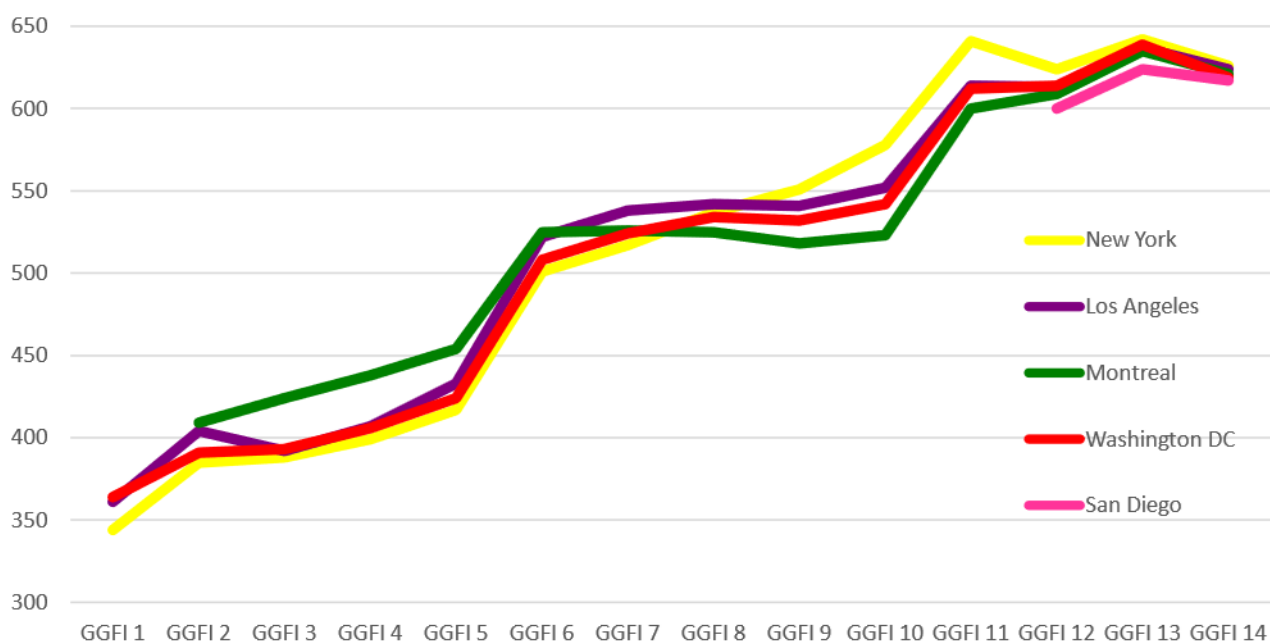
## North America

- New York dropped one place in the index and continues to lead in the region, with Los Angeles, and Montreal also in the world top 10.
- North American centres were rated significantly above average by people from Asia/Pacific, North America, and those from a multi-regional background; and below average by people in other regions.

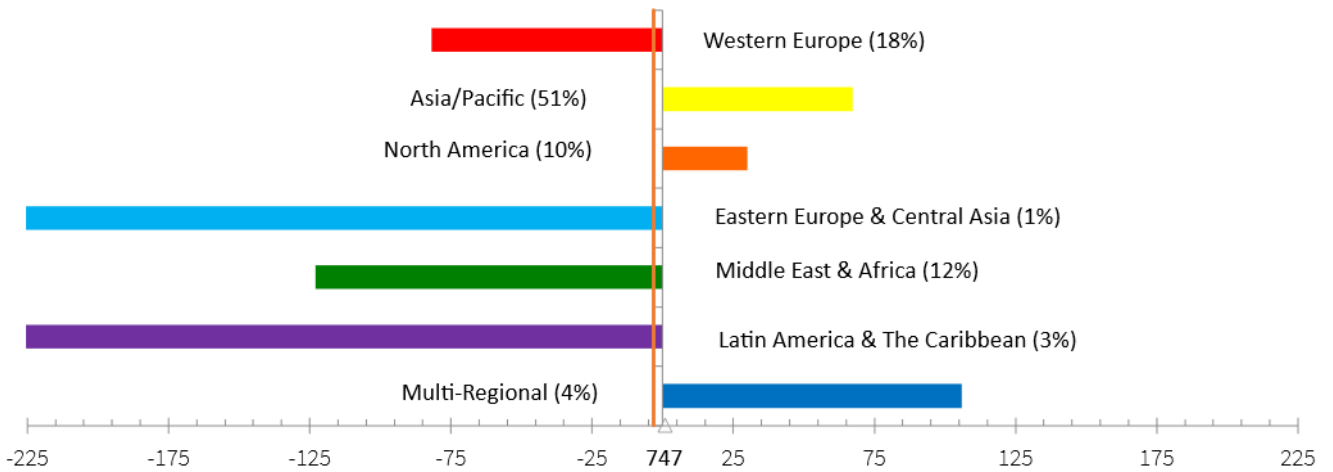
**Table 10 | North American Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
New York	5	626	4	642	▼1	▼16
Los Angeles	7	624	8	637	▲1	▼13
Montreal	10	621	10	635	0	▼14
Washington DC	12	619	7	639	▼5	▼20
San Diego	14	617	19	624	▲5	▼7
Chicago	15	616	11	634	▼4	▼18
Toronto	16	615	16	627	0	▼12
San Francisco	17	614	12	631	▼5	▼17
Vancouver	22	609	21	622	▼1	▼13
Minneapolis / St Paul	31	599	New	New	New	New
Boston	32	598	26	617	▼6	▼19
Atlanta	41	589	47	596	▲6	▼7
Calgary	49	581	48	595	▼1	▼14
Philadelphia	53	577	49	594	▼4	▼17
Miami	67	563	59	584	▼8	▼21

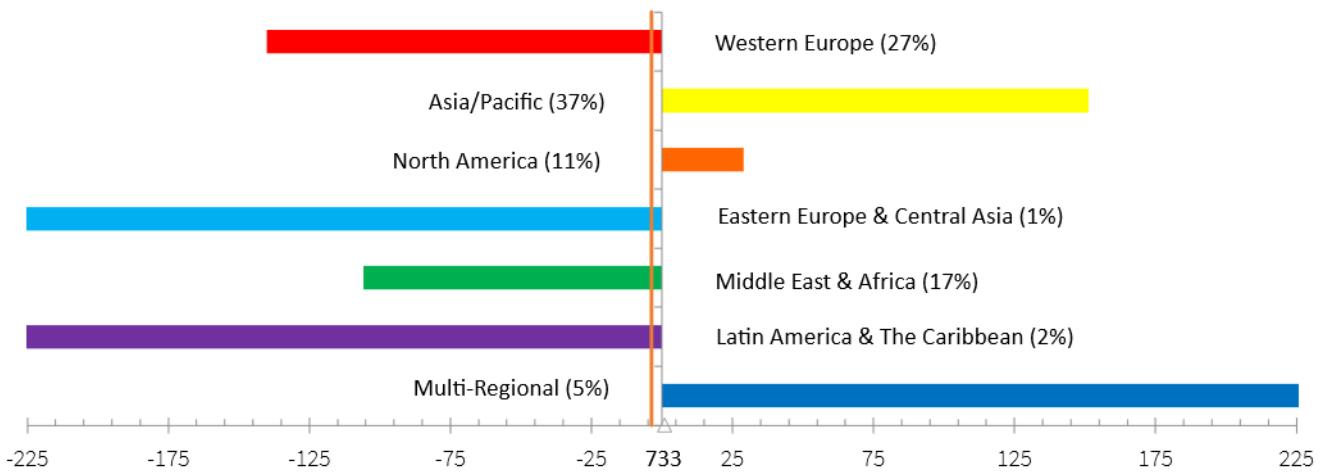
**Chart 15 | Top Five North American Centres Ratings Over Time**



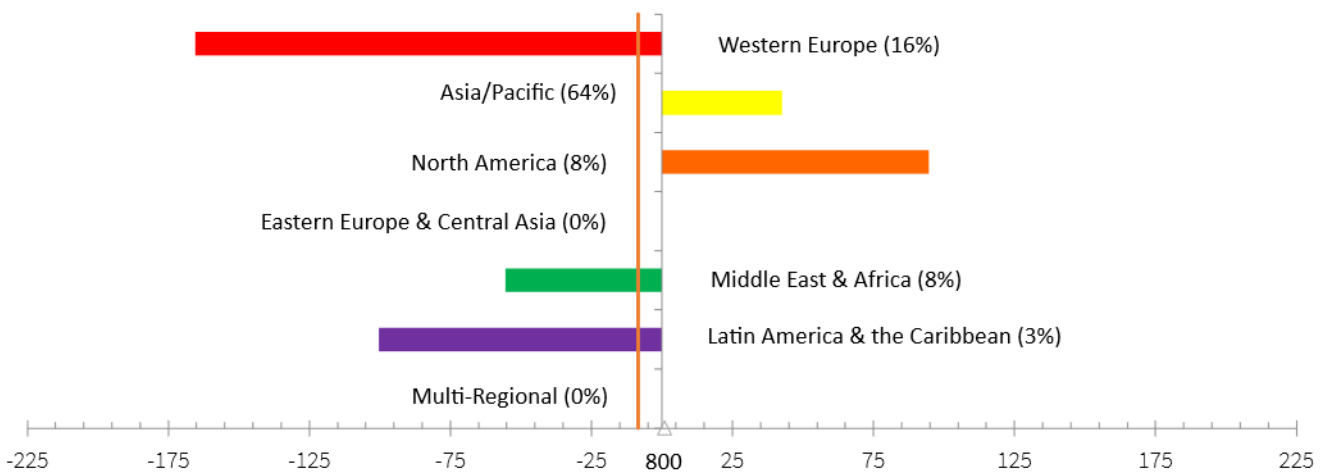
**Chart 16 | North American Regional Assessments - Difference From The Mean**



**Chart 17 | Regional Assessments For New York - Difference From The Mean**



**Chart 18 | Regional Assessments For Los Angeles - Difference From The Mean**





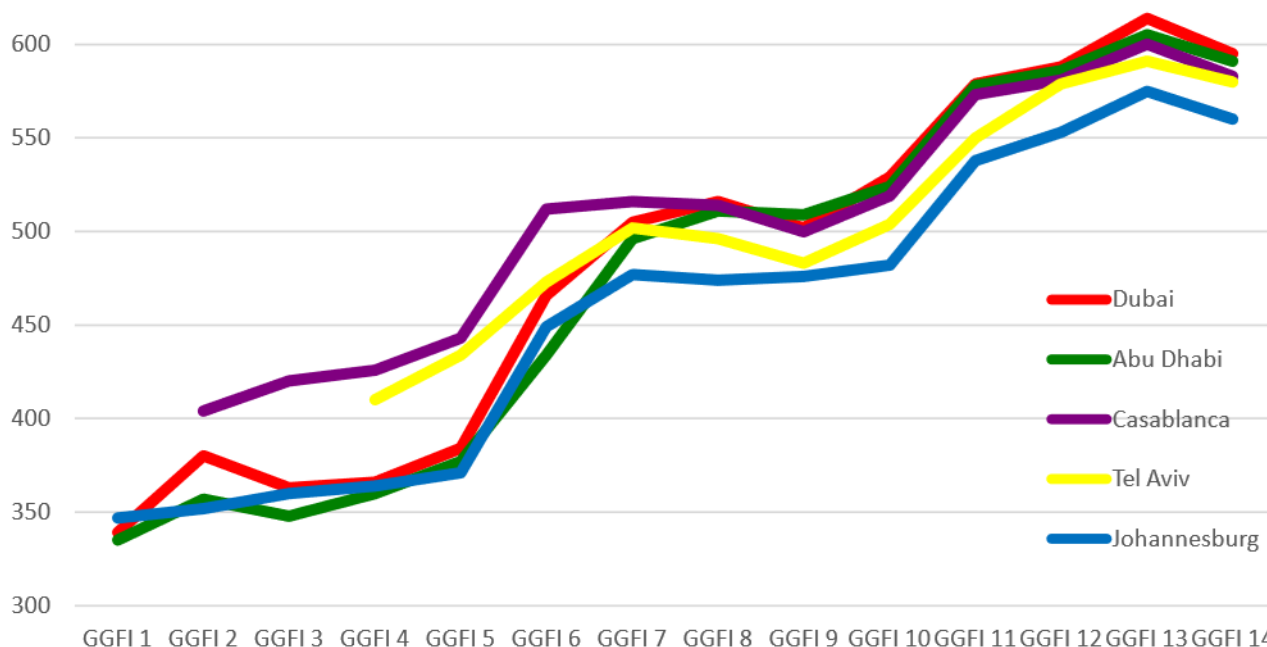
## Middle East & Africa

- Dubai leads in the region, but fell six places, with Abu Dhabi in second place and Casablanca leading in Africa.
- Most centres in the region fell in the ranking, although Mauritius rose four places and Bahrain five places.
- Respondents from Asia/Pacific, North America, Latin America & The Caribbean, and those with a multi-regional background rated Middle East & African centres higher than average.

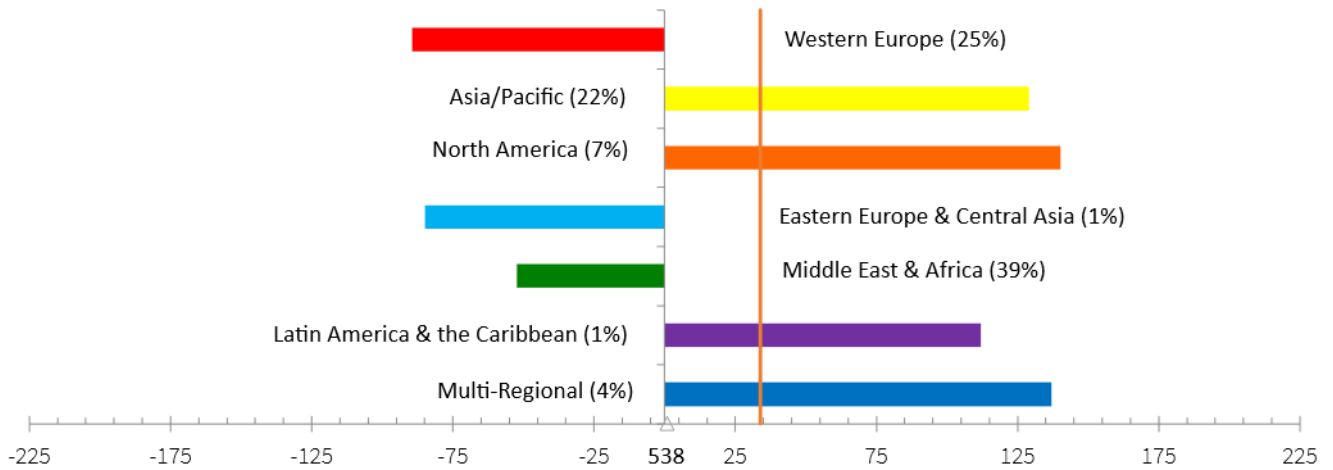
**Table 11 | Middle Eastern & African Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Dubai	35	595	29	614	▼ 6	▼ 19
Abu Dhabi	39	591	38	605	▼ 1	▼ 14
Casablanca	47	583	43	600	▼ 4	▼ 17
Tel Aviv	50	580	52	591	▲ 2	▼ 11
Johannesburg	70	560	67	575	▼ 3	▼ 15
Mauritius	74	556	78	561	▲ 4	▼ 5
Doha	75	555	60	583	▼ 15	▼ 28
Kigali	80	550	81	558	▲ 1	▼ 8
Cape Town	85	545	80	559	▼ 5	▼ 14
Riyadh	88	542	83	554	▼ 5	▼ 12
Bahrain	90	540	95	534	▲ 5	▲ 6
Nairobi	95	530	96	531	▲ 1	▼ 1
Lagos	97	524	93	536	▼ 4	▼ 12

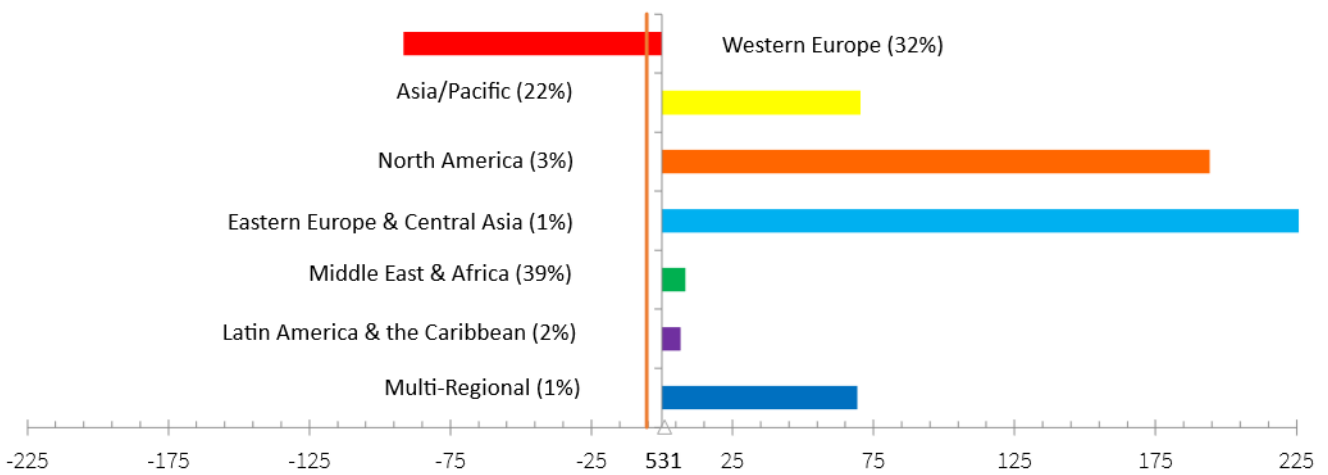
**Chart 19 | Top Five Middle East & Africa Centre Ratings Over Time**



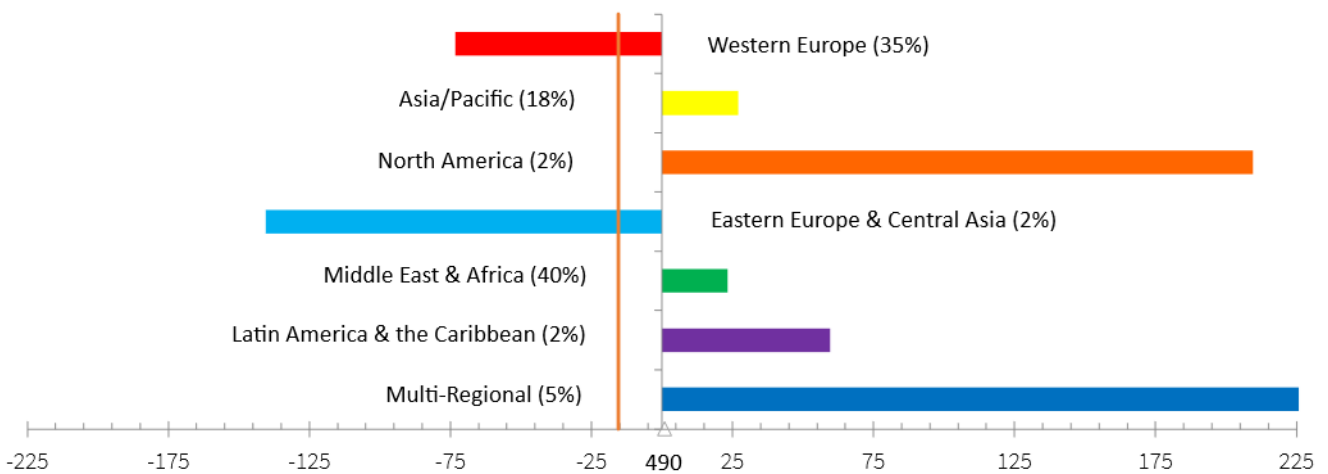
**Chart 20 | Middle East & Africa Regional Assessments - Difference From The Mean**



**Chart 21 | Regional Assessments For Dubai - Difference From The Mean**



**Chart 22 | Regional Assessments For Abu Dhabi - Difference From The Mean**



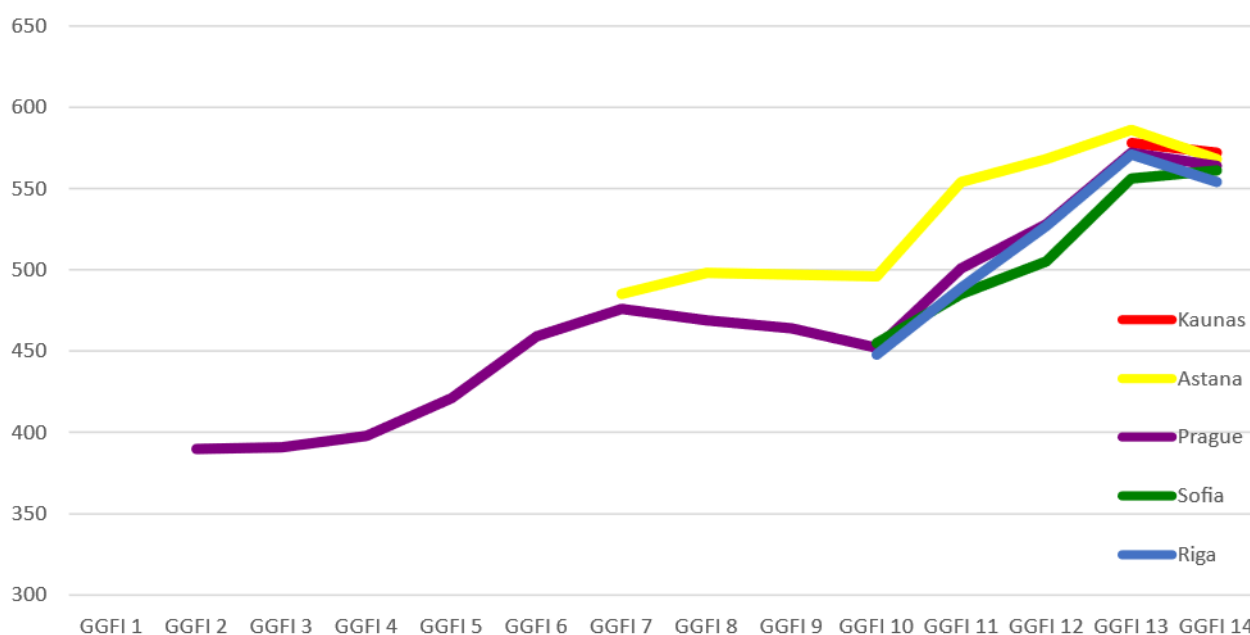
## Eastern Europe & Central Asia

- Although it only entered the GGFI in the last edition, Kaunas rose six places in the ranks to overtake Astana.
- Respondents from Asia/Pacific, North America, Latin America & The Caribbean, and those from a multi-regional background rated Eastern European & Central Asia centres higher than average.

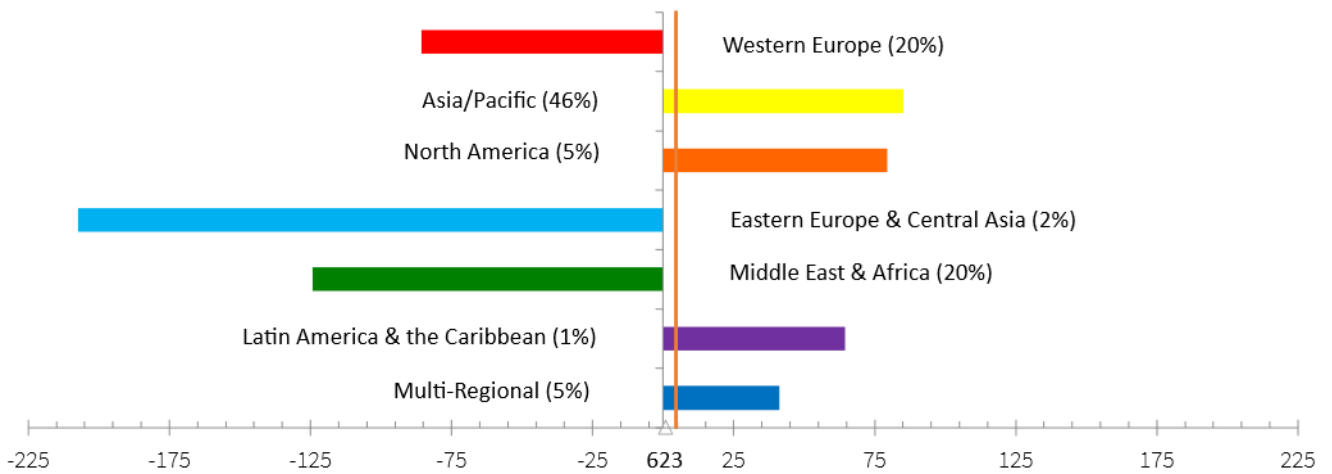
**Table 12 | Eastern European & Central Asia Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Kaunas	58	572	64	578	▲6	▼6
Astana	62	568	57	586	▼5	▼18
Prague	66	564	70	572	▲4	▼8
Sofia	69	561	82	556	▲13	▲5
Riga	76	554	71	571	▼5	▼17
Istanbul	77	553	85	549	▲8	▲4
Warsaw	83	547	84	550	▲1	▼3
Moscow	87	543	89	542	▲2	▲1
Cyprus	92	538	86	548	▼6	▼10
Almaty	94	536	90	541	▼4	▼5

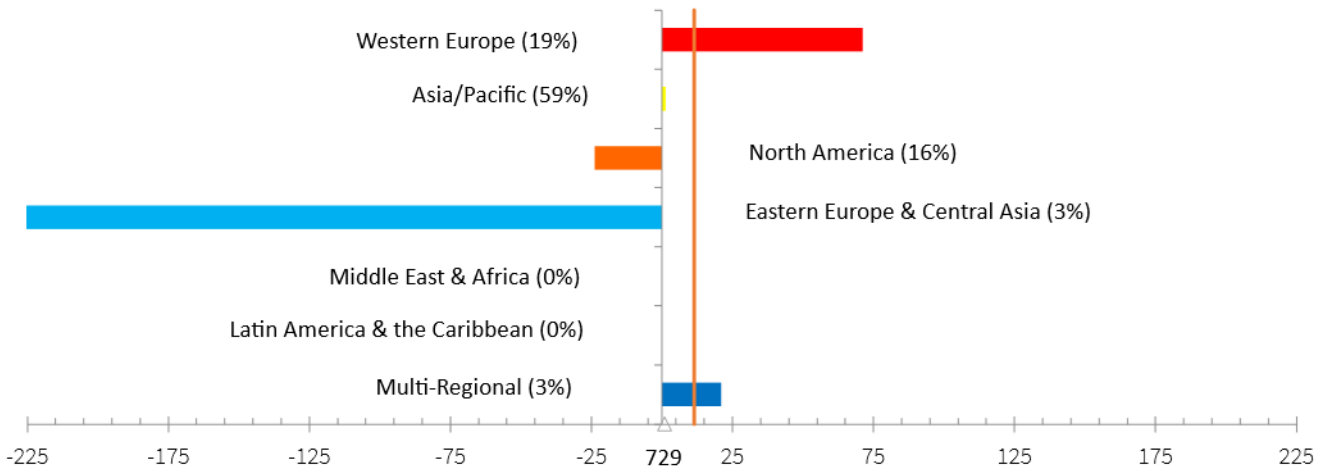
**Chart 23 | Top Five Eastern Europe & Central Asia Centre Ratings Over Time**



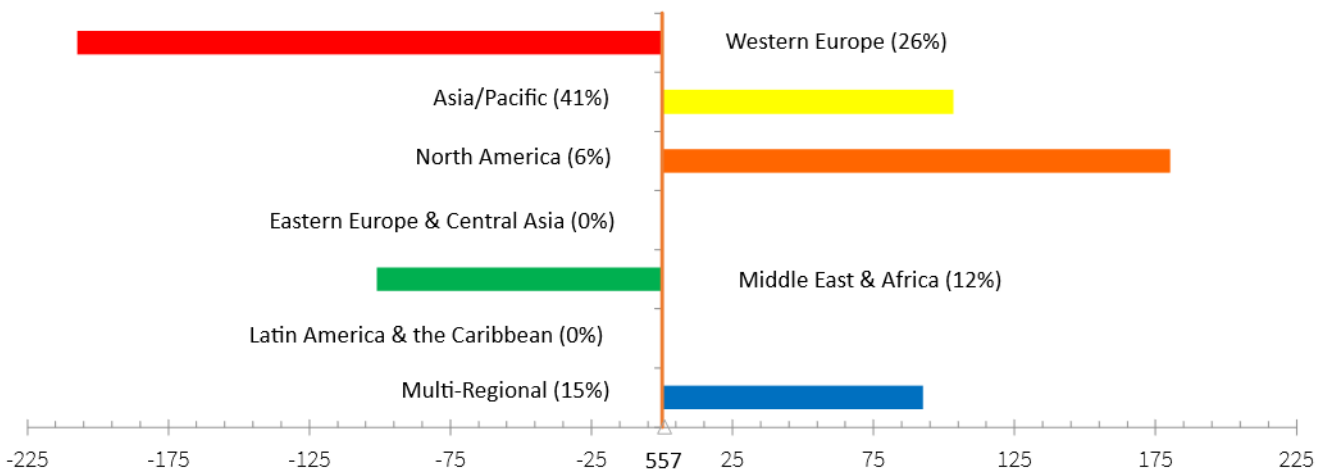
**Chart 24 | Eastern Europe & Central Asia Regional Assessments - Difference From The Mean**



**Chart 25 | Regional Assessments For Kaunas - Difference From The Mean**



**Chart 26 | Regional Assessments For Astana - Difference From The Mean**



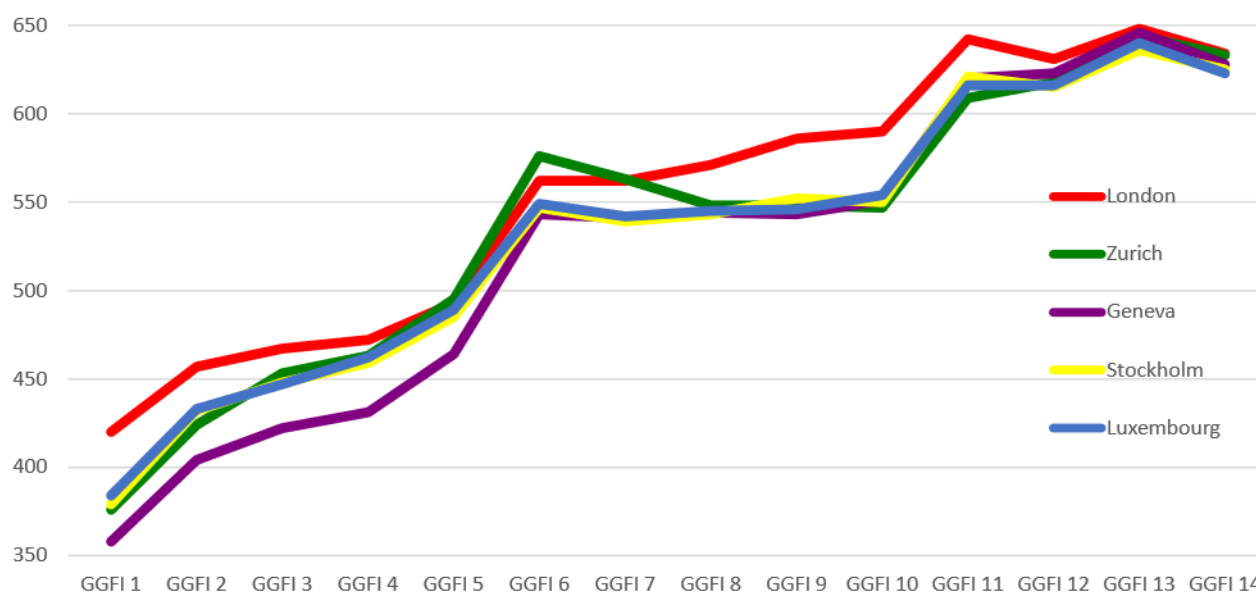
## Western Europe

- London led the region, with Zurich in second place, followed by Geneva, and Stockholm. Six Western European centres feature in the world top ten.
- Respondents from Western Europe, Eastern Europe & Central Asia, and the Middle East & Africa rated Western European centres lower than average.

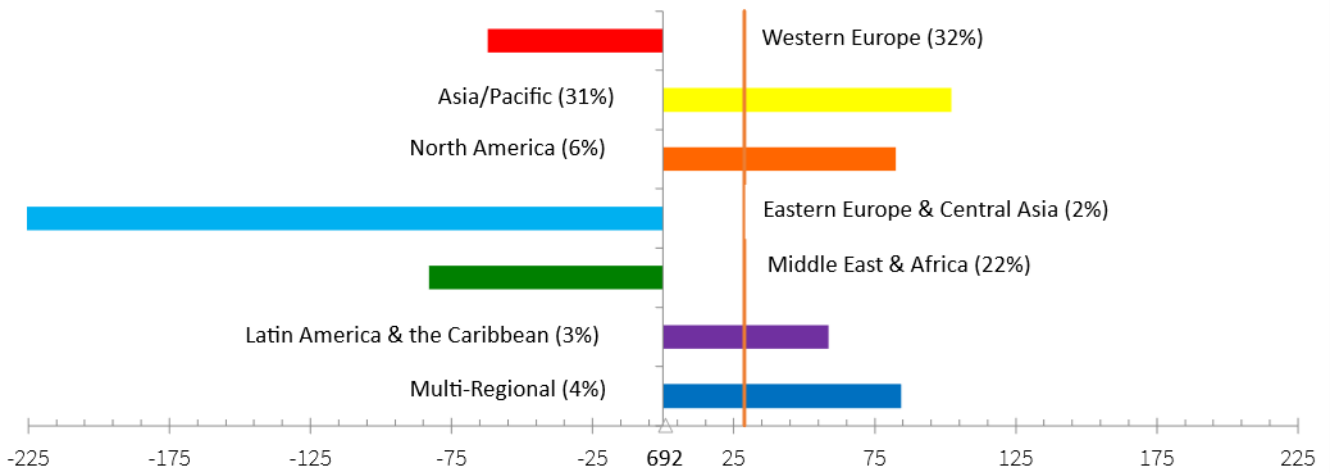
**Table 13 | Top 15 Western European Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
London	1	634	1	648	0	▼14
Zurich	2	633	3	644	▲1	▼11
Geneva	4	628	2	646	▼2	▼18
Stockholm	6	625	9	636	▲3	▼11
Luxembourg	8	623	6	640	▼2	▼17
Copenhagen	9	622	13	630	▲4	▼8
Oslo	11	620	14	629	▲3	▼9
Lugano	13	618	18	625	▲5	▼7
Paris	18	613	17	626	▼1	▼13
Edinburgh	19	612	24	619	▲5	▼7
Frankfurt	20	611	20	623	0	▼12
Amsterdam	23	608	15	628	▼8	▼20
Hamburg	25	606	34	609	▲9	▼3
Munich	26	605	33	610	▲7	▼5
Brussels	27	604	36	607	▲9	▼3

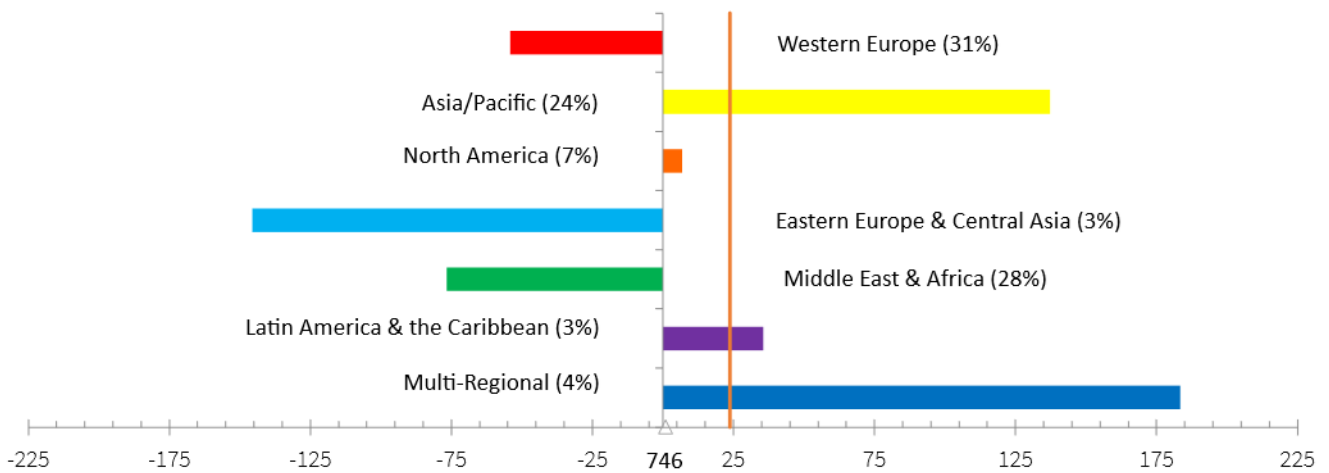
**Chart 27 | Top Five Western European Centre Ratings Over Time**



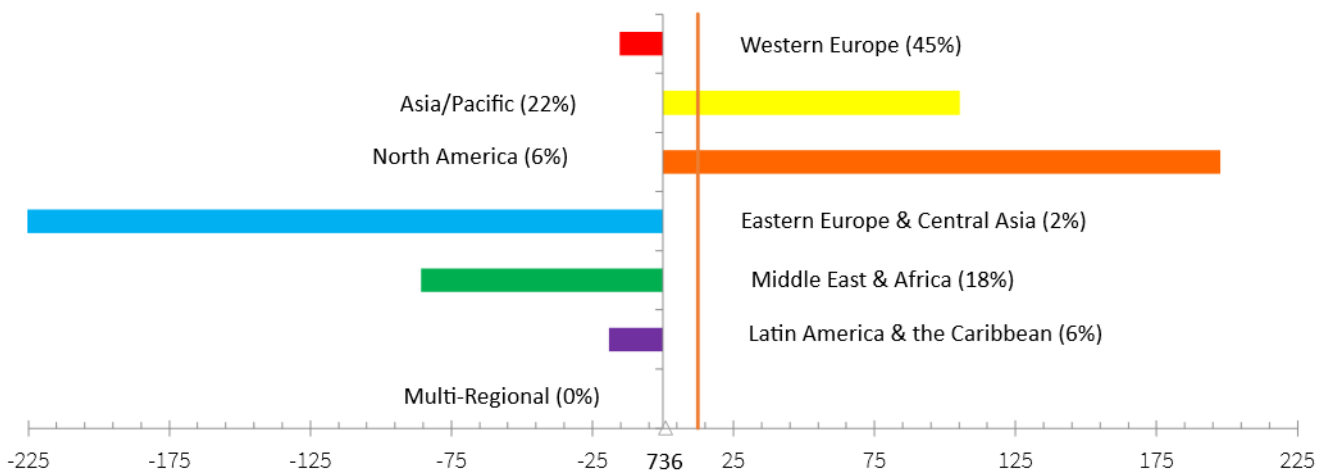
**Chart 28 | Western Europe Regional Assessments - Difference From The Mean**



**Chart 29 | Regional Assessments For London - Difference From The Mean**



**Chart 30 | Regional Assessments For Zurich - Difference From The Mean**



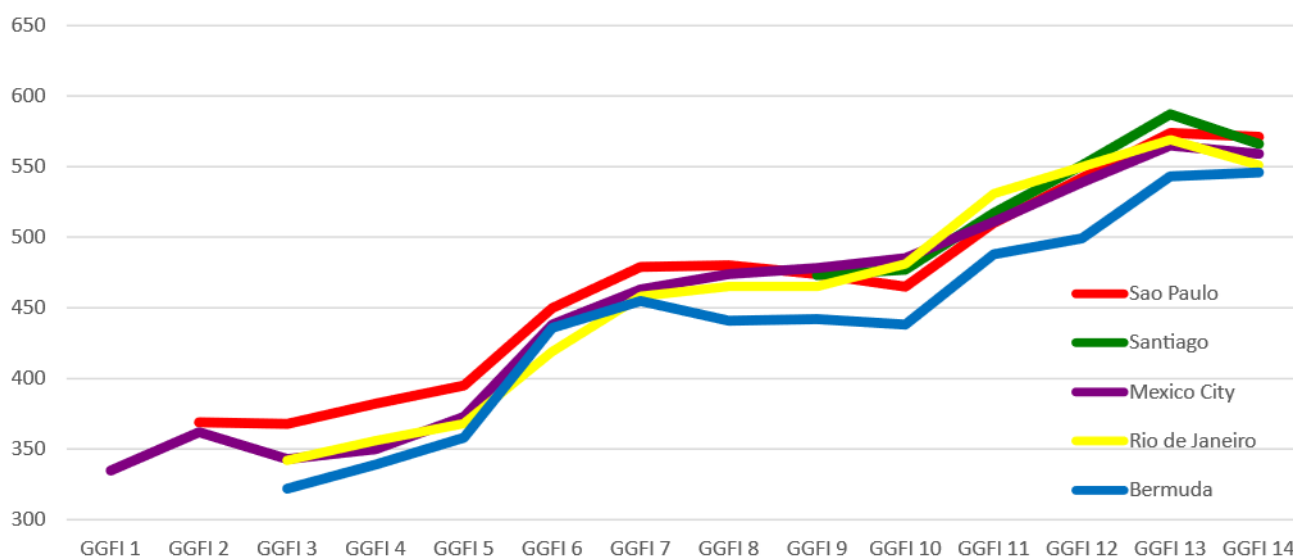
## Latin America & The Caribbean

- Sao Paulo leads the region, with Santiago dropping to second position.
- Respondents from Asia/Pacific, North America, and those from a multi-regional background rated Latin America & The Caribbean centres above average.

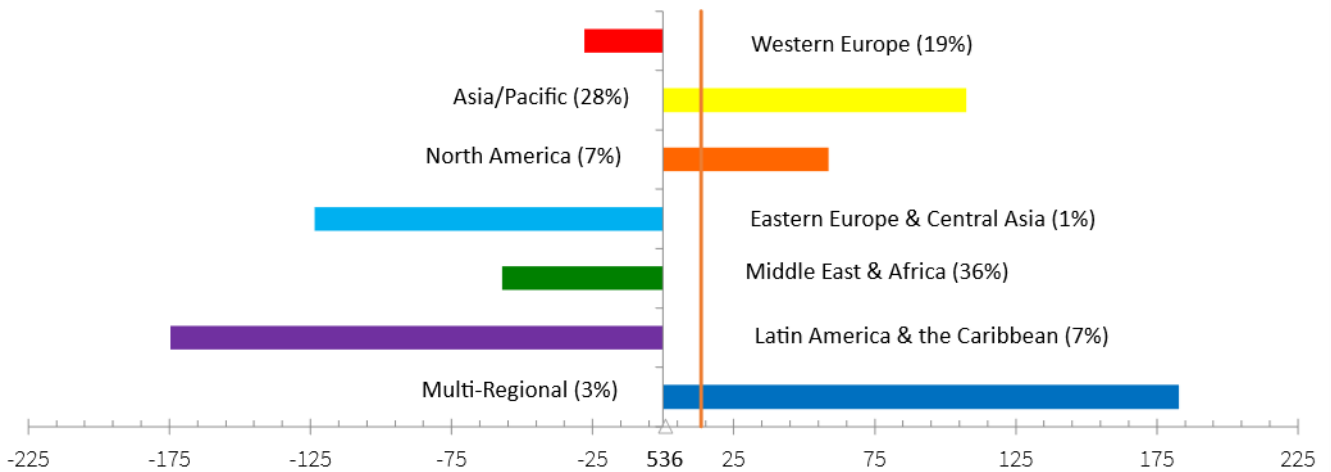
**Table 14 | Latin American & Caribbean Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Sao Paulo	59	571	68	574	▲9	▼3
Santiago	64	566	56	587	▼8	▼21
Mexico City	71	559	77	565	▲6	▼6
Rio de Janeiro	79	551	73	569	▼6	▼18
Bermuda	84	546	88	543	▲4	▲3
Bahamas	89	541	94	535	▲5	▲6
Cayman Islands	93	537	92	537	▼1	0
British Virgin Islands	96	527	91	540	▼5	▼13

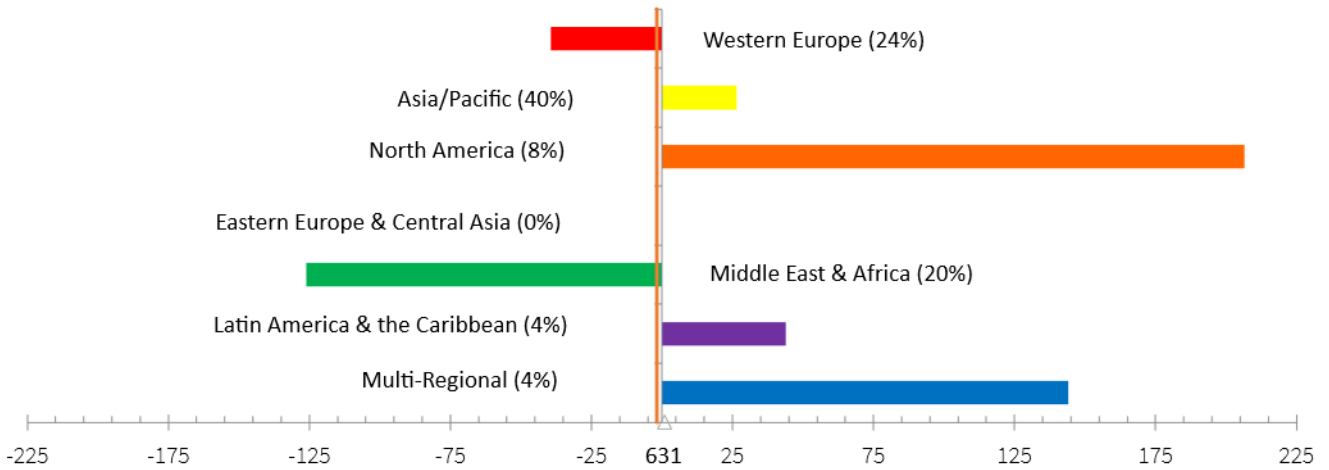
**Chart 31 | Top Five Latin American & Caribbean Centre Ratings Over Time**



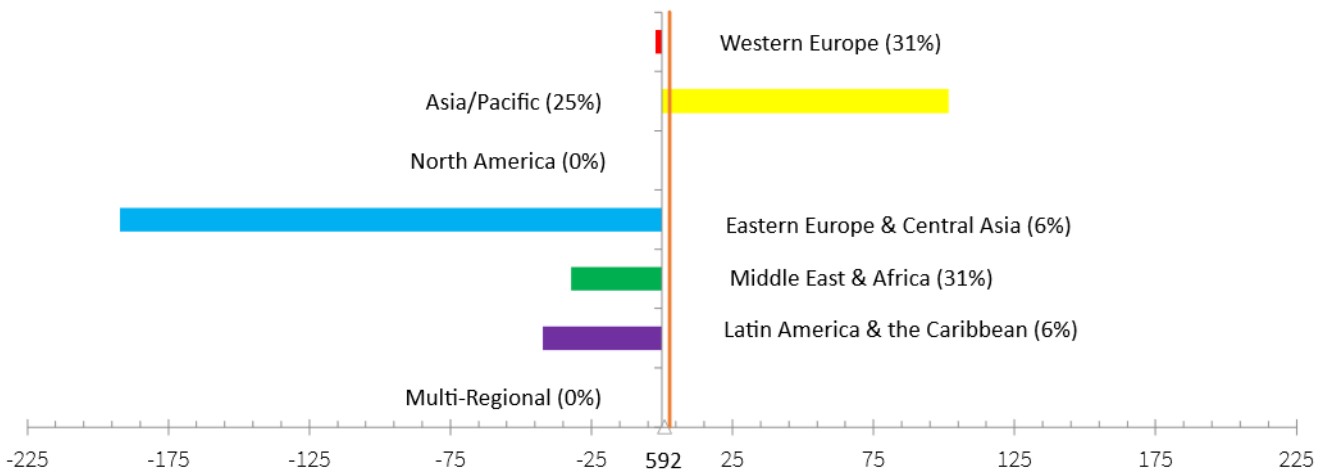
**Chart 32 | Latin America & The Caribbean Regional Assessments - Difference From The Mean**



**Chart 33 | Regional Assessments For Sao Paulo - Difference From The Mean**



**Chart 34 | Regional Assessments For Santiago - Difference From The Mean**





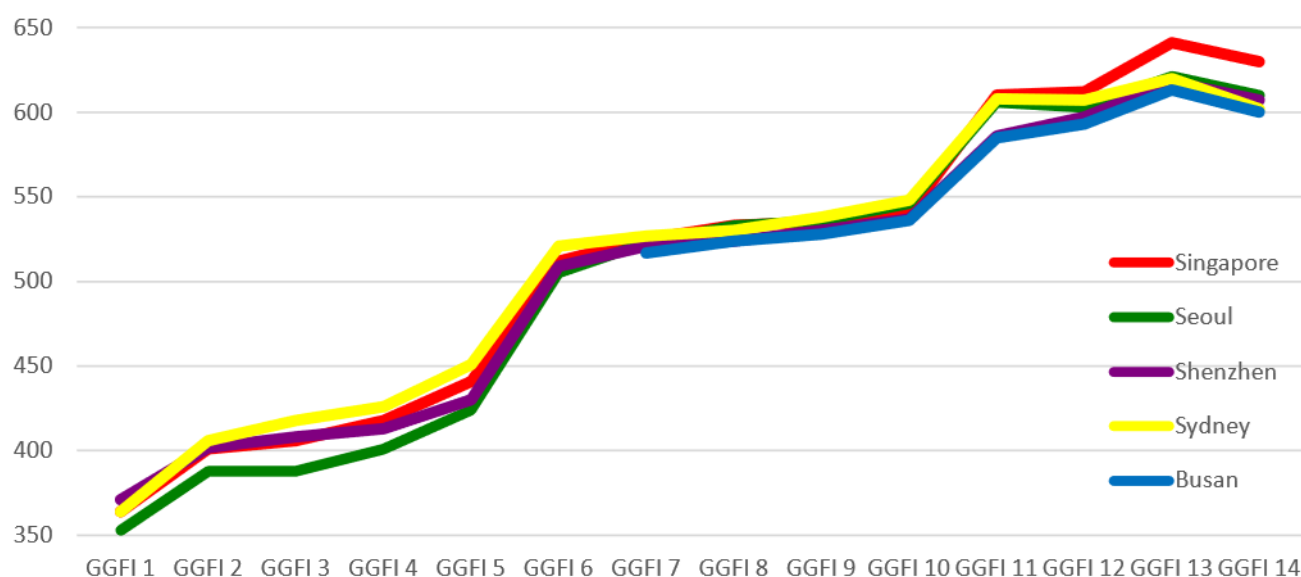
## Asia/Pacific

- Singapore continued to lead the region and rose two places. Seoul took second place.
- Most centres fell in the rankings, other than Singapore, Seoul, Shenzhen, and Jakarta.
- Respondents from Asia/Pacific, North America, and people operating across more than one region rated these centres above average.

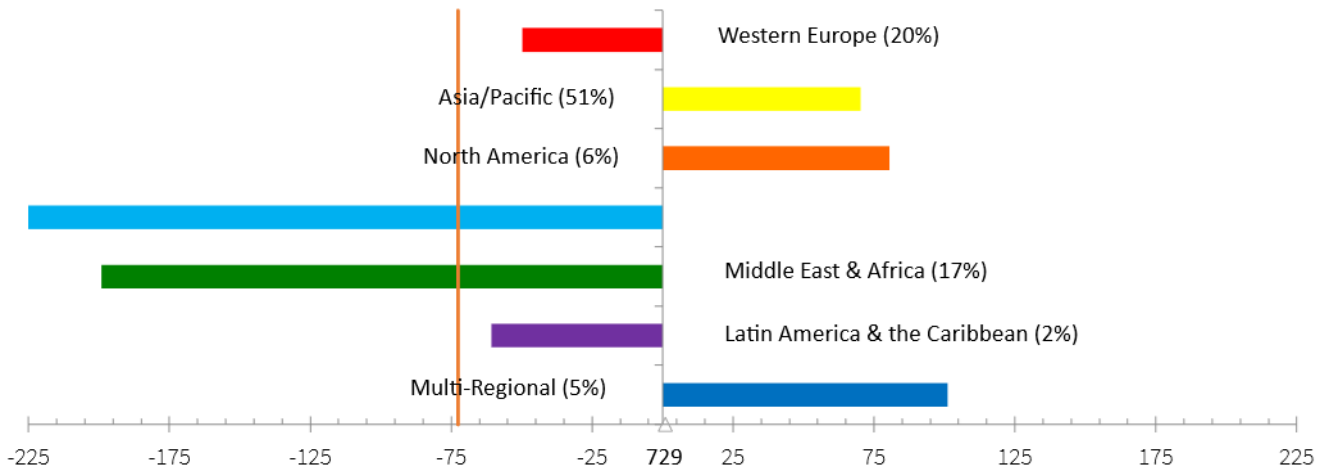
**Table 15 | Top 15 Asia/Pacific Centres In GGFI 14**

Centre	GGFI 14		GGFI 13		Change In Rank	Change In Rating
	Rank	Rating	Rank	Rating		
Singapore	3	630	5	641	▲ 2	▼ 11
Seoul	21	610	22	621	▲ 1	▼ 11
Shenzhen	24	607	25	618	▲ 1	▼ 11
Sydney	29	602	23	620	▼ 6	▼ 18
Busan	30	600	30	613	0	▼ 13
Beijing	33	597	31	612	▼ 2	▼ 15
Shanghai	34	596	28	615	▼ 6	▼ 19
Melbourne	37	593	32	611	▼ 5	▼ 18
Hong Kong	38	592	37	606	▼ 1	▼ 14
Qingdao	40	590	39	604	▼ 1	▼ 14
Tokyo	42	588	41	602	▼ 1	▼ 14
Osaka	51	579	46	597	▼ 5	▼ 18
Guangzhou	54	576	50	593	▼ 4	▼ 17
Wellington	55	575	35	608	▼ 20	▼ 33
Jakarta	63	567	65	577	▲ 2	▼ 10

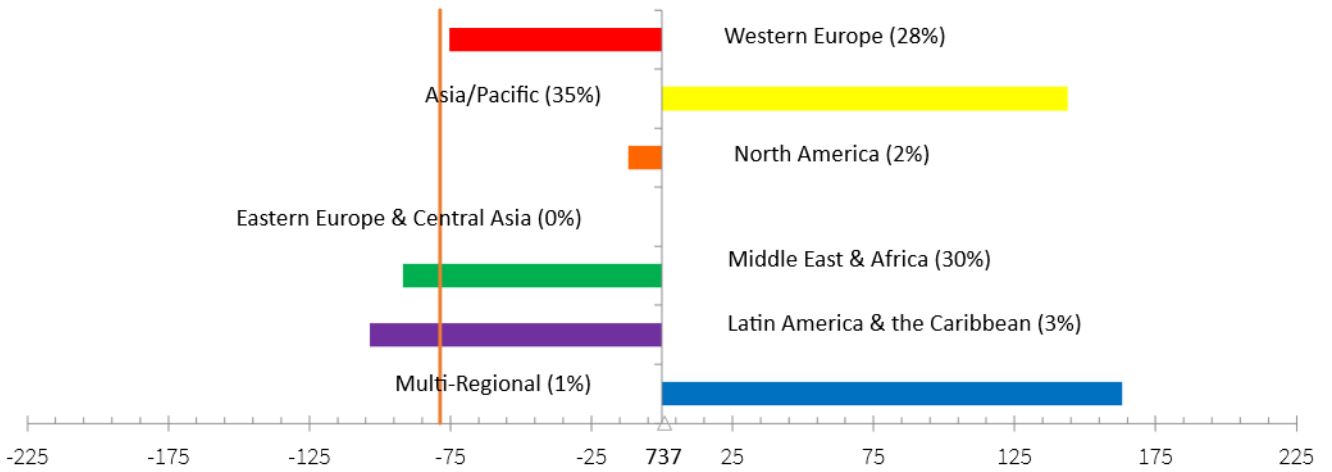
**Chart 35 | Top Five Asia/Pacific Centre Ratings Over Time**



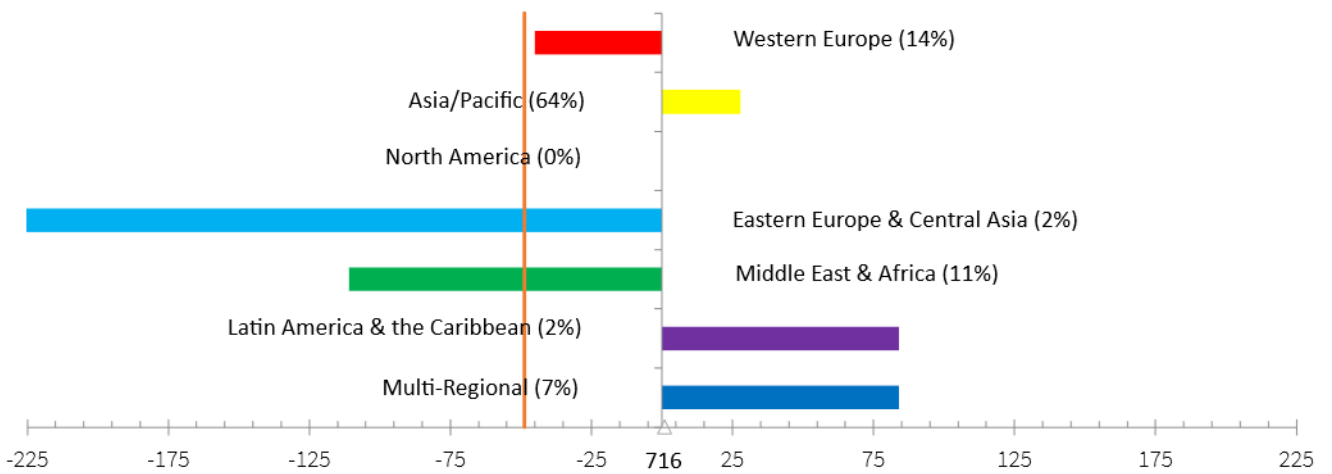
**Chart 36 | Asia/Pacific Regional Assessments - Difference From The Mean**



**Chart 37 | Regional Assessments For Singapore - Difference From The Mean**



**Chart 38 | Regional Assessments For Seoul - Difference From The Mean**

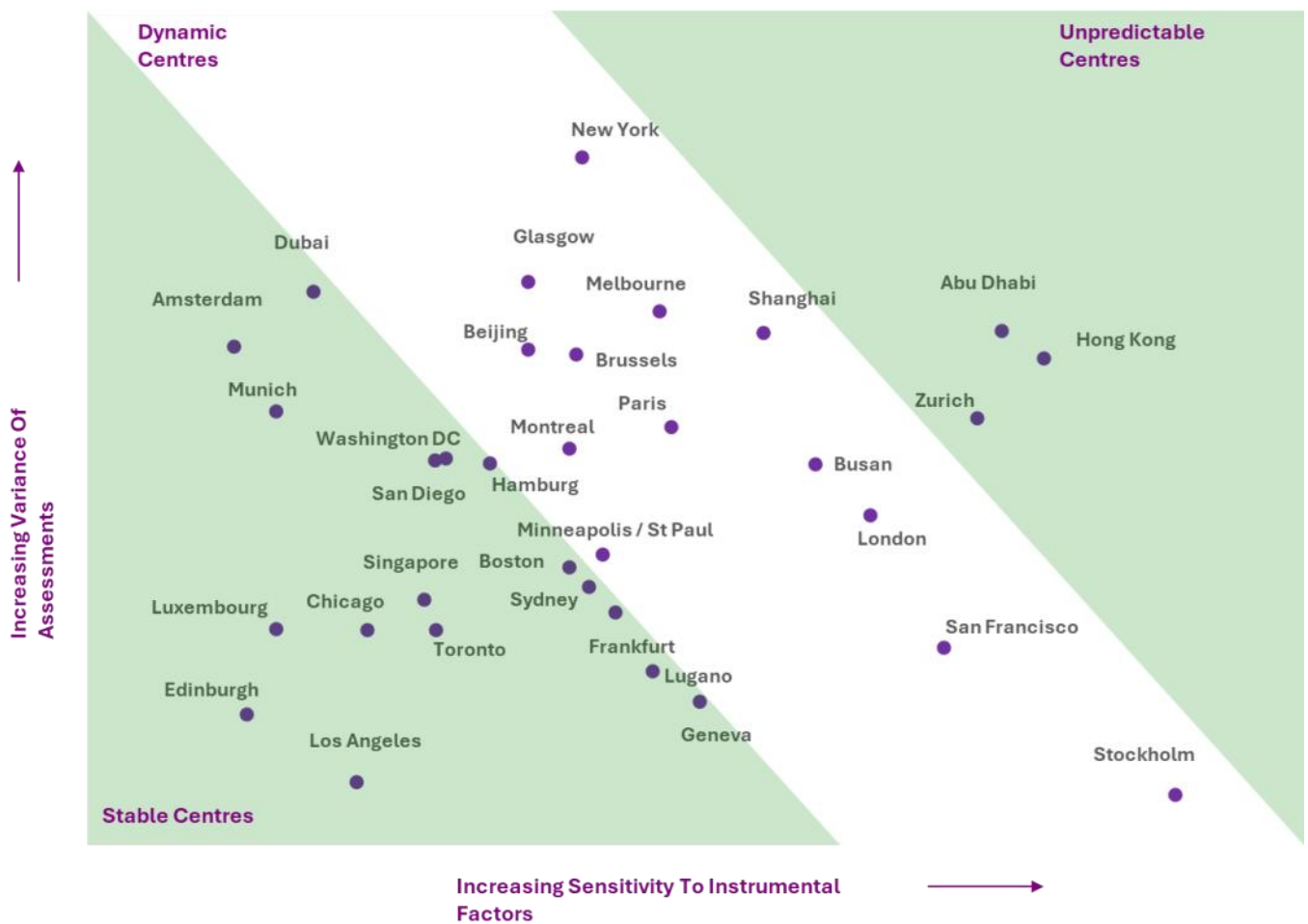


## Stability

The GGFI model allows for an analysis of the stability of financial centres in the index, which can be useful for centres when assessing their development strategies. Chart 39 contrasts the ‘spread’ or variance of the individual assessments given to the top 40 centres in GGFI 14, with sensitivity to changes in the instrumental factors.

The chart shows three bands of financial centres. In the top right segment, Abu Dhabi, Hong Kong, and Zurich have a higher sensitivity to changes in the instrumental factors and a higher variance of assessments than other centres. Centres in this area have the highest potential for future movement in their ranking. The stable centres in the bottom left have a lower sensitivity to change and demonstrate greater consistency in their GGFI ratings.

**Chart 39 | Stability In Assessments And Instrumental Factors**



## Industry Sectors

We can analyse the differing assessments provided by respondents working in various industry sectors by building the index separately using the responses provided only from those industries. This analysis allows a relative measure of the sectoral strengths and weaknesses for each centre.

Table 16 illustrates separate sub-indices for the Policy, Knowledge (incorporating universities and NGOs), Investment, and Professional Services sectors. The table shows how the index ranking varies according to industry sector. The leading centres in the index generally feature in the higher ranks of the industry sector sub-indices, with London first or second in all groups, although there are interesting strengths and weaknesses. For example, New York ranks 8th in the Policy sub-index, Luxembourg is second in the Policy sub-index, and Washington DC is fourth in the Capital Markets and Investment sub-indices.

**Table 16 | GGFI 14 Industry Sector Sub-Indices - Top 15**

Rank	Industry Sub-Sector				
	Policy	Knowledge	Capital Markets	Investment	Professional Services
1	London	London	New York	London	New York
2	Luxembourg	New York	London	New York	London
3	Geneva	Luxembourg	Los Angeles	Zurich	Luxembourg
4	Singapore	Zurich	Washington DC	Washington DC	Zurich
5	Lugano	Singapore	San Francisco	Luxembourg	Singapore
6	Zurich	San Francisco	Singapore	Stockholm	Oslo
7	Paris	Los Angeles	Zurich	Singapore	Washington DC
8	New York	Paris	Geneva	San Diego	San Diego
9	Montreal	Geneva	Stockholm	Chicago	Geneva
10	Oslo	Stockholm	Montreal	Copenhagen	Stockholm
11	Stockholm	Edinburgh	Oslo	Geneva	Montreal
12	Vancouver	Seoul	Luxembourg	Oslo	San Francisco
13	Munich	Copenhagen	Chicago	San Francisco	Vancouver
14	Washington DC	Frankfurt	San Diego	Los Angeles	Seoul
15	San Diego	Chicago	Vancouver	Lugano	Los Angeles

*“Development of international standards for regulating green bonds and carbon markets may drive adoption across financial centres.”*

LEGISLATIVE COUNSEL, PROFESSIONAL SERVICES ORGANISATION, DOHA

Taking the sectoral analysis further, we can also calculate the index using the responses only from those working directly in green finance in financial services organisations. The results are shown in table 17.

**Table 17 | GGFI 14 Using Responses Only From Respondents Working Directly In Green Finance**

Centre	Rating	Adjusted Rank	GGFI 14 Rank	Difference
London	627	1	1	0
Zurich	620	3	2	-1
Singapore	617	6	3	-3
Geneva	610	12	4	-8
New York	611	9	5	-4
Stockholm	611	9	6	-3
Los Angeles	604	15	7	-8
Luxembourg	616	7	8	1
Copenhagen	625	2	9	7
Montreal	618	4	10	6
Oslo	618	4	11	7
Washington DC	615	8	12	4
Lugano	605	14	13	-1
San Diego	611	9	14	5
Chicago	609	13	15	2
Toronto	598	29	16	-13
San Francisco	599	27	17	-10
Paris	604	15	18	3
Edinburgh	604	15	19	4
Frankfurt	602	20	20	0
Seoul	604	15	21	6
Vancouver	600	23	22	-1
Amsterdam	600	23	23	0
Shenzhen	596	30	24	-6
Hamburg	599	27	25	-2
Munich	602	20	26	6
Brussels	600	23	27	4
Madrid	594	31	28	-3
Sydney	603	19	29	10
Busan	585	36	30	-6
Minneapolis / St Paul	601	22	31	9
Boston	593	32	32	0
Beijing	600	23	33	10
Shanghai	589	34	34	0
Dubai	591	33	35	2
Glasgow	580	39	36	-3
Melbourne	583	37	37	0
Hong Kong	582	38	38	0
Abu Dhabi	575	46	39	-7
Qingdao	570	51	40	-11
Atlanta	572	49	41	-8
Tokyo	588	35	42	7
Rome	576	44	43	-1
Berlin	574	47	44	-3
Helsinki	564	64	45	-19
Milan	568	57	46	-11
Casablanca	570	51	47	-4
Lisbon	565	60	48	-12
Calgary	580	39	49	10

Centre	Rating	Adjusted Rank	GGFI 14 Rank	Difference
Tel Aviv	571	50	50	0
Osaka	579	42	51	9
Vienna	580	39	52	13
Philadelphia	569	53	53	0
Guangzhou	565	60	54	-6
Wellington	561	74	55	-19
Dublin	565	60	56	-4
Isle of Man	563	68	57	-11
Kaunas	577	43	58	15
Sao Paulo	556	79	59	-20
Jersey	564	64	60	-4
Guernsey	566	59	61	2
Astana	563	68	62	-6
Jakarta	564	64	63	-1
Santiago	556	79	64	-15
GIFT City-Gujarat	574	47	65	18
Prague	576	44	66	22
Miami	565	60	67	7
New Delhi	569	53	68	15
Sofia	569	53	69	16
Johannesburg	567	58	70	12
Mexico City	562	72	71	-1
Monaco	569	53	72	19
Malta	560	75	73	-2
Mauritius	562	72	74	2
Doha	559	77	75	-2
Riga	564	64	76	12
Istanbul	560	75	77	2
Kuala Lumpur	563	68	78	10
Rio de Janeiro	530	96	79	-17
Kigali	542	89	80	-9
Manila	539	91	81	-10
Bangkok	551	83	82	-1
Warsaw	558	78	83	5
Bermuda	551	83	84	1
Cape Town	545	88	85	-3
Liechtenstein	536	94	86	-8
Moscow	547	86	87	1
Riyadh	541	90	88	-2
Bahamas	563	68	89	21
Bahrain	538	93	90	-3
Mumbai	547	86	91	5
Cyprus	554	81	92	11
Cayman Islands	554	81	93	12
Almaty	549	85	94	9
Nairobi	539	91	95	4
British Virgin Islands	523	97	96	-1
Lagos	534	95	97	2

## GGFI 14 Interest, Impact, And Drivers Of Green Finance

In addition to requesting ratings of depth and quality for financial centres, the GGFI questionnaire asks additional questions concerning the development of green finance. Among the topics covered are:

- The areas of green finance considered most interesting by respondents;
- The areas of green finance which respondents consider to have the greatest impact on sustainability; and
- Factors driving the development of green finance.

### Areas Of Interest In Green Finance And Areas With The Most Impact

We asked respondents to identify the areas of green finance which they considered most interesting and separately the areas of green finance they consider have the most impact on sustainability. The results are shown in Charts 40 and 41.

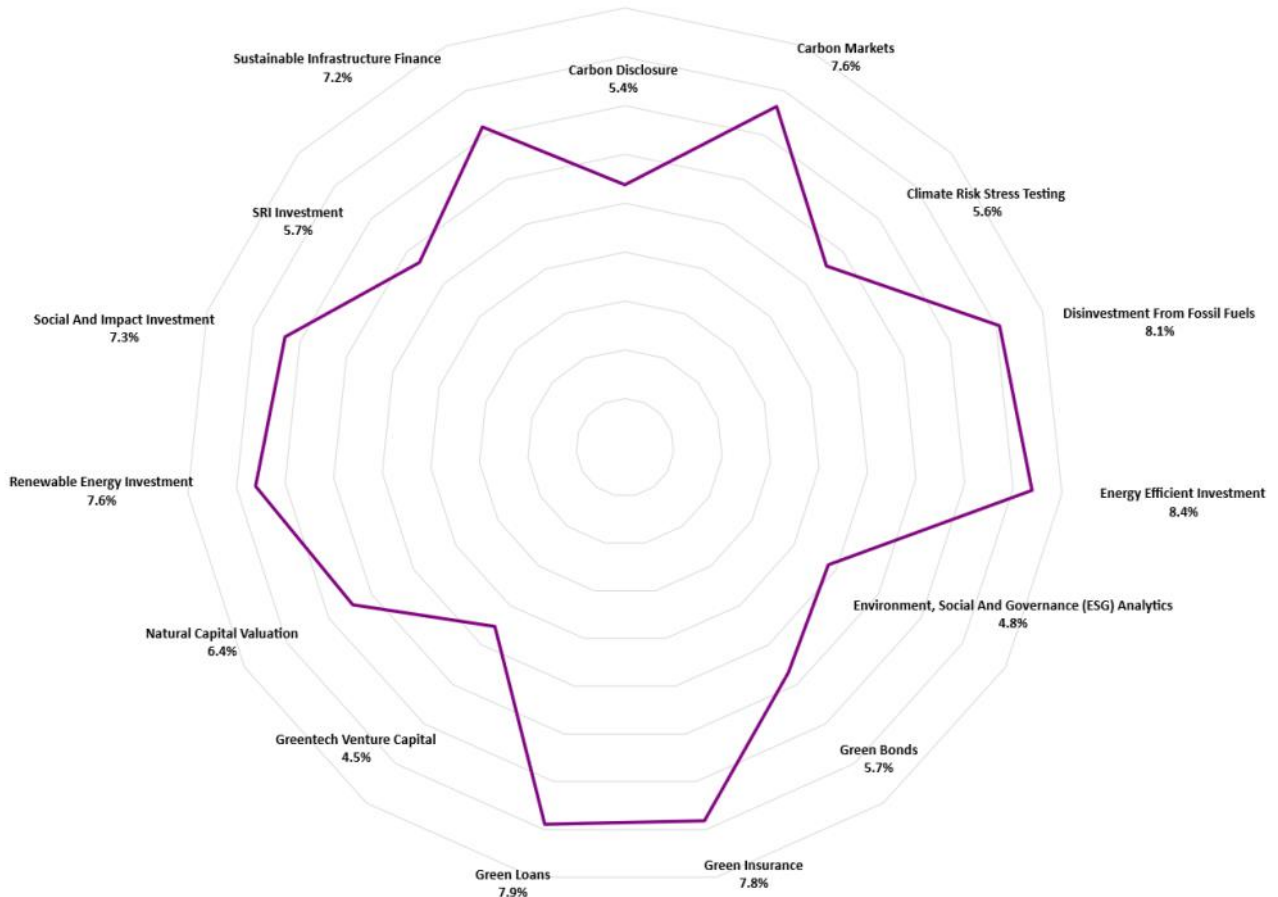
With respect to interest, Energy Efficient Investment is the leading issue mentioned by our respondents, ahead of Renewable Energy Investment, and Environment, Social And Governance (ESG) Analytics. The areas considered least interesting are Natural Capital Valuation and Greentech Venture Capital.

**Chart 40 | Interest - Percentage Of Total Mentions**

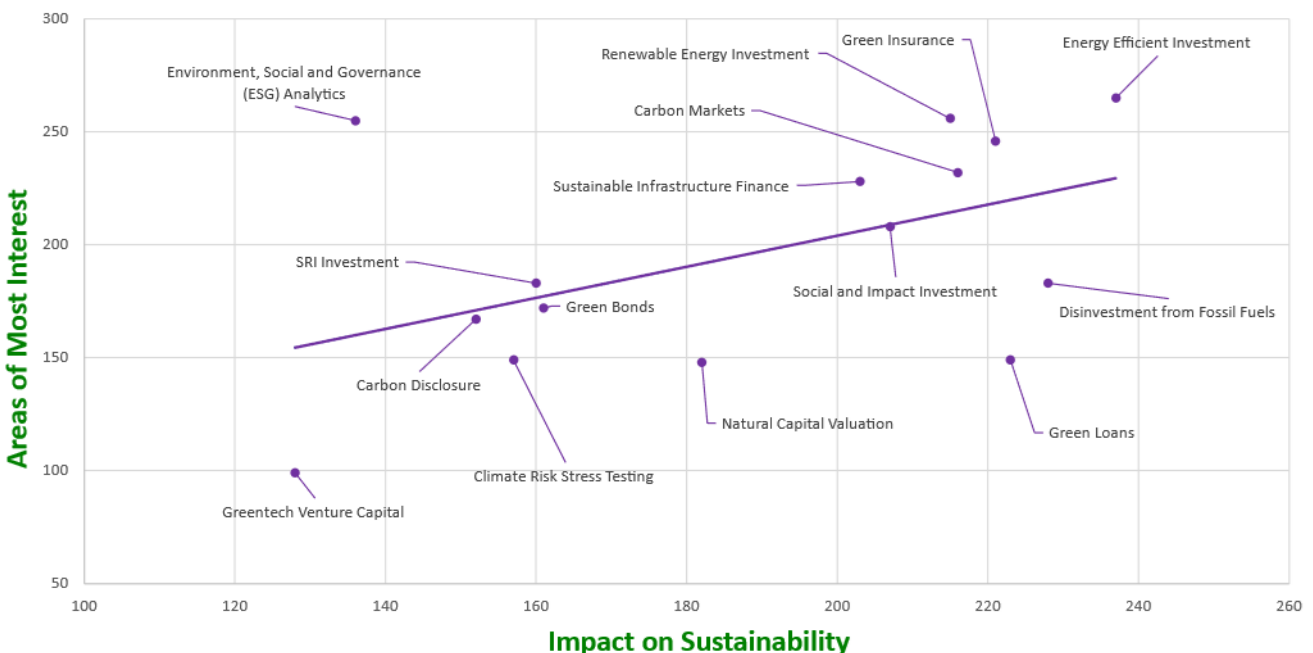


With respect to impact, Energy Efficient Investment, Disinvestment from Fossil Fuels, and Green Loans are rated as the areas of green finance with most impact. Carbon Disclosure, Environment, Social And Governance (ESG) Analytics, and GreenTech Venture Capital are ranked lowest on this measure by our respondents.

**Chart 41 | Impact - Percentage Of Total Mentions**

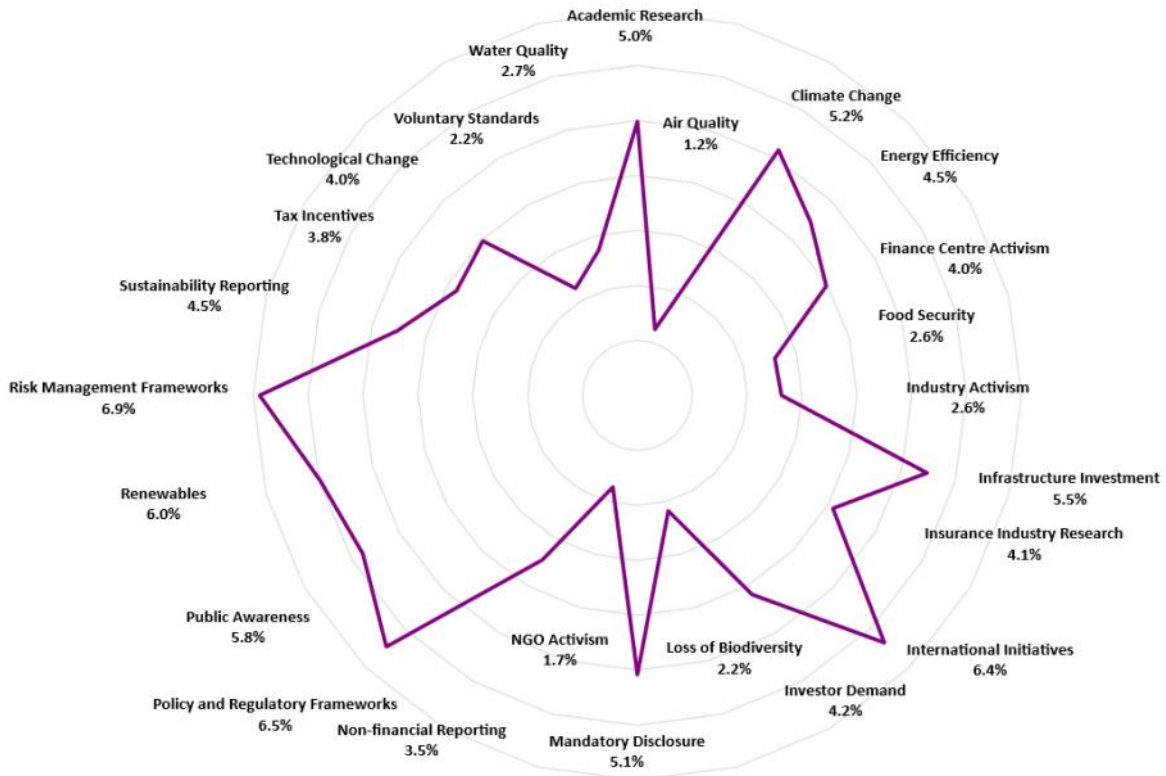


**Chart 42 | The Correlation Between Interest And Impact**



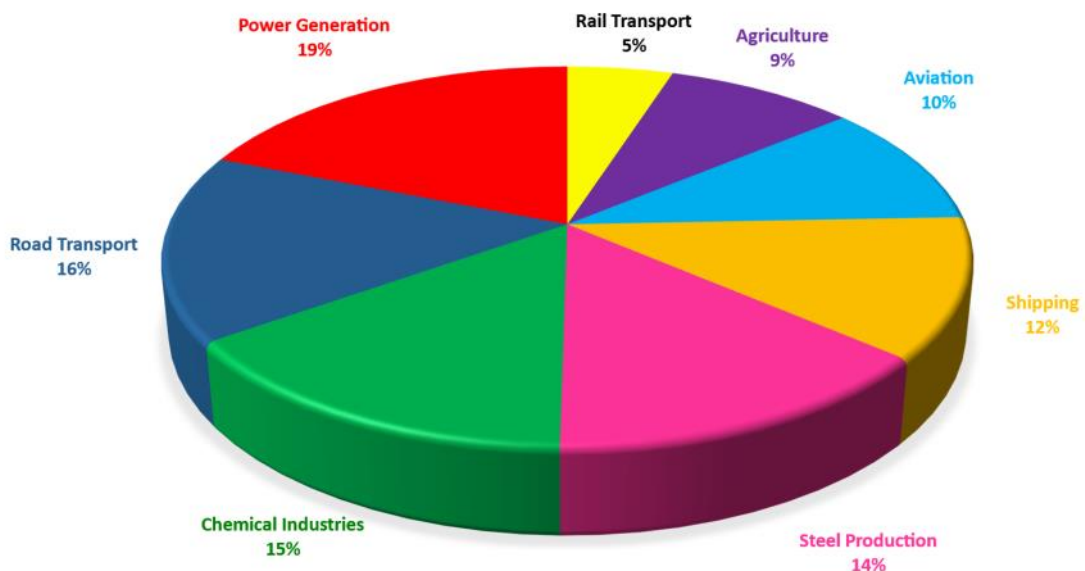
With respect to drivers, Risk Management Frameworks, Policy and Regulatory Frameworks, and International Initiatives are seen as the most important drivers of green finance. Loss Of Biodiversity, NGO Activism, and Air Quality are mentioned least frequently. These results underline the continuing importance of international cooperation in the development of green finance, alongside risk management as, for example, insurance risks rise.

**Chart 43 | Drivers - Percentage Of Total Mentions**



We also asked respondents to the GGFI survey to indicate in which sectors hydrogen is likely to replace fossil fuel as a primary fuel source. The results are shown in chart 44, with power generation and road transport mentioned most frequently.

**Chart 44 | Hydrogen Futures**





## Appendix 1: Assessment Details

Table 18 | Details Of GGFI 14 Assessments By Centre

Centre	GGFI 14		Assessments		
	Rank	Rating	Number	Average	Std Dev
London	1	634	144	746	199
Zurich	2	633	49	736	214
Singapore	3	630	99	737	186
Geneva	4	628	49	741	170
New York	5	626	150	733	254
Stockholm	6	625	41	728	156
Los Angeles	7	624	61	800	158
Luxembourg	8	623	77	701	181
Copenhagen	9	622	24	738	145
Montreal	10	621	50	783	209
Oslo	11	620	21	786	122
Washington DC	12	619	86	798	207
Lugano	13	618	25	728	175
San Diego	14	617	24	789	208
Chicago	15	616	60	741	181
Toronto	16	615	62	725	181
San Francisco	17	614	54	782	178
Paris	18	613	77	683	212
Edinburgh	19	612	35	664	168
Frankfurt	20	611	74	700	184
Seoul	21	610	44	716	125
Vancouver	22	609	56	755	104
Amsterdam	23	608	52	684	225
Shenzhen	24	607	24	778	142
Hamburg	25	606	24	686	207
Munich	26	605	31	688	215
Brussels	27	604	46	685	224
Madrid	28	603	55	710	135
Sydney	29	602	51	727	188
Busan	30	600	27	631	207
Minneapolis / St Paul	31	599	26	759	193
Boston	32	598	59	716	191
Beijing	33	597	64	651	224
Shanghai	34	596	48	719	227
Dubai	35	595	95	531	233
Glasgow	36	594	35	679	235
Melbourne	37	593	31	756	230
Hong Kong	38	592	69	573	223
Abu Dhabi	39	591	55	490	227
Qingdao	40	590	467	858	48
Atlanta	41	589	34	700	191
Tokyo	42	588	43	678	189
Rome	43	587	39	722	148
Berlin	44	586	41	667	231
Helsinki	45	585	16	769	138
Milan	46	584	30	671	198
Casablanca	47	583	23	490	234
Lisbon	48	582	20	690	198

Centre	GGFI 14		Assessments		
	Rank	Rating	Number	Average	Std Dev
Calgary	49	581	53	738	132
Tel Aviv	50	580	19	658	164
Osaka	51	579	25	703	165
Vienna	52	578	20	594	220
Philadelphia	53	577	35	743	137
Guangzhou	54	576	14	616	224
Wellington	55	575	10	760	181
Dublin	56	574	51	622	210
Isle of Man	57	573	31	638	247
Kaunas	58	572	32	729	114
Sao Paulo	59	571	25	631	217
Jersey	60	570	29	628	173
Guernsey	61	569	31	585	206
Astana	62	568	34	557	220
Jakarta	63	567	27	595	213
Santiago	64	566	16	592	172
GIFT City-Gujarat	65	565	18	651	289
Prague	66	564	38	632	174
Miami	67	563	27	562	239
New Delhi	68	562	28	622	263
Sofia	69	561	25	710	136
Johannesburg	70	560	49	545	229
Mexico City	71	559	25	548	187
Monaco	72	558	25	680	195
Malta	73	557	36	628	194
Mauritius	74	556	47	587	250
Doha	75	555	37	555	227
Riga	76	554	30	728	131
Istanbul	77	553	32	568	163
Kuala Lumpur	78	552	38	600	193
Rio de Janeiro	79	551	16	566	189
Kigali	80	550	40	544	246
Manila	81	549	24	574	193
Bangkok	82	548	25	572	229
Warsaw	83	547	30	534	215
Bermuda	84	546	28	585	180
Cape Town	85	545	43	553	180
Liechtenstein	86	544	22	616	202
Moscow	87	543	33	630	220
Riyadh	88	542	16	477	199
Bahamas	89	541	29	476	207
Bahrain	90	540	22	495	180
Mumbai	91	539	41	472	199
Cyprus	92	538	33	491	213
Cayman Islands	93	537	34	460	173
Almaty	94	536	13	587	214
Nairobi	95	530	42	510	192
British Virgin Islands	96	527	42	476	200
Lagos	97	524	37	468	222

Table 19 | Details Of Ratings For The GGFI Dimensions By Centre

Centre	Overall Rank	Depth Rating	Quality Rating	Centre	Overall Rank	Depth Rating	Quality Rating
London	1	312	322	Calgary	49	290	291
Zurich	2	314	319	Tel Aviv	50	287	293
Singapore	3	312	318	Osaka	51	279	300
Geneva	4	311	317	Vienna	52	288	290
New York	5	310	316	Philadelphia	53	287	290
Stockholm	6	311	314	Guangzhou	54	290	286
Los Angeles	7	311	313	Wellington	55	284	291
Luxembourg	8	309	314	Dublin	56	286	288
Copenhagen	9	308	314	Isle of Man	57	284	289
Montreal	10	309	312	Kaunas	58	281	291
Oslo	11	319	301	Sao Paulo	59	283	288
Washington DC	12	307	312	Jersey	60	284	286
Lugano	13	308	310	Guernsey	61	290	279
San Diego	14	303	314	Astana	62	281	287
Chicago	15	305	311	Jakarta	63	280	287
Toronto	16	305	310	Santiago	64	275	291
San Francisco	17	306	308	GIFT City-Gujarat	65	279	286
Paris	18	303	310	Prague	66	283	281
Edinburgh	19	304	308	Miami	67	283	280
Frankfurt	20	307	304	New Delhi	68	279	283
Seoul	21	303	307	Sofia	69	283	278
Vancouver	22	305	304	Johannesburg	70	283	277
Amsterdam	23	303	305	Mexico City	71	277	282
Shenzhen	24	308	299	Monaco	72	283	275
Hamburg	25	296	310	Malta	73	264	293
Munich	26	298	307	Mauritius	74	271	285
Brussels	27	303	301	Doha	75	273	282
Madrid	28	301	302	Riga	76	276	278
Sydney	29	301	301	Istanbul	77	273	280
Busan	30	300	300	Kuala Lumpur	78	270	282
Minneapolis / St Paul	31	300	299	Rio de Janeiro	79	270	281
Boston	32	296	302	Kigali	80	270	280
Beijing	33	300	297	Manila	81	275	274
Shanghai	34	296	300	Bangkok	82	266	282
Dubai	35	290	305	Warsaw	83	274	273
Glasgow	36	292	302	Bermuda	84	264	282
Melbourne	37	297	296	Cape Town	85	267	278
Hong Kong	38	295	297	Liechtenstein	86	269	275
Abu Dhabi	39	292	299	Moscow	87	272	271
Qingdao	40	298	292	Riyadh	88	265	277
Atlanta	41	297	292	Bahamas	89	269	272
Tokyo	42	286	302	Bahrain	90	266	274
Rome	43	290	297	Mumbai	91	269	270
Berlin	44	296	290	Cyprus	92	263	275
Helsinki	45	295	290	Cayman Islands	93	263	274
Milan	46	290	294	Almaty	94	267	269
Casablanca	47	289	294	Nairobi	95	264	266
Lisbon	48	291	291	British Virgin Islands	96	261	266
				Lagos	97	262	262

## Appendix 2: Interest, Impact, And Drivers Details

**Table 20 | Areas Of Green Finance With The Greatest Impact**

Area of Green Finance	Number Of Mentions	Percentage Of Total
Energy Efficient Investment	237	8.4%
Disinvestment From Fossil Fuels	228	8.1%
Green Loans	223	7.9%
Green Insurance	221	7.8%
Carbon Markets	216	7.6%
Renewable Energy Investment	215	7.6%
Social And Impact Investment	207	7.3%
Sustainable Infrastructure Finance	203	7.2%
Natural Capital Valuation	182	6.4%
Green Bonds	161	5.7%
SRI Investment	160	5.7%
Climate Risk Stress Testing	157	5.6%
Carbon Disclosure	152	5.4%
Environment, Social And Governance (ESG) Analytics	136	4.8%
Greentech Venture Capital	128	4.5%
<b>Totals</b>	<b>2,826</b>	<b>100.0%</b>

**Table 21 | Areas Of Green Finance Of Most Interest To Respondents**

Area of Green Finance	Number Of Mentions	Percentage Of Total
Energy Efficient Investment	265	9.0%
Renewable Energy Investment	256	8.7%
Environment, Social And Governance (ESG) Analytics	255	8.7%
Green Insurance	246	8.4%
Carbon Markets	232	7.9%
Sustainable Infrastructure Finance	228	7.8%
Social and Impact Investment	208	7.1%
Disinvestment From Fossil Fuels	183	6.2%
SRI Investment	183	6.2%
Green Bonds	172	5.9%
Carbon Disclosure	167	5.7%
Climate Risk Stress Testing	149	5.1%
Green Loans	149	5.1%
Natural Capital Valuation	148	5.0%
Greentech Venture Capital	99	3.4%
<b>Totals</b>	<b>2,940</b>	<b>100.0%</b>

**Table 22 | Drivers Of Green Finance**

Driver	Number of Mentions	Percentage Of Total
Risk Management Frameworks	199	6.9%
Policy and Regulatory Frameworks	187	6.5%
International Initiatives	184	6.4%
Renewables	173	6.0%
Public Awareness	167	5.8%
Infrastructure Investment	158	5.5%
Climate Change	149	5.2%
Mandatory Disclosure	147	5.1%
Academic Research	144	5.0%
Sustainability Reporting	131	4.5%
Energy Efficiency	129	4.5%
Investor Demand	121	4.2%
Insurance Industry Research	119	4.1%
Finance Centre Activism	115	4.0%
Technological Change	115	4.0%
Tax Incentives	110	3.8%
Non-financial Reporting	100	3.5%
Water Quality	79	2.7%
Industry Activism	76	2.6%
Food Security	75	2.6%
Voluntary Standards	65	2.2%
Loss of Biodiversity	63	2.2%
NGO Activism	50	1.7%
Air Quality	36	1.2%
<b>Totals</b>	<b>2,892</b>	<b>100.0%</b>



## Appendix 3: Respondents' Details

**Table 23 | Respondents By Industry Sector**

Industry Sector	Number Of Respondents	Percentage Of Respondents
Banking	51	6.82%
Debt Capital Market	24	3.21%
Equity Capital Markets	38	5.08%
Insurance	20	2.67%
Investment	75	10.03%
Knowledge	76	10.16%
Local Green Initiatives	39	5.21%
Policy and Public Finance	89	18.32%
Professional Services	166	22.19%
Trading	33	4.41%
Other	137	18.32%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

**Table 24 | Respondents By Engagement In Green Finance**

Engagement In Green Finance	Number Of Respondents	Percentage Of Respondents
Working Full-time On Green Finance	59	7.89%
Working Part-time On Green Finance	322	43.05%
Interested in Green Finance	332	44.39%
Other/not given	35	4.68%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

**Table 25 | Respondents By Region**

Region	Number Of Respondents	Percentage Of Respondents
Asia/Pacific	347	46.39%
Western Europe	166	22.19%
Eastern Europe & Central Asia	9	1.20%
North America	62	8.29%
Middle East & Africa	108	14.44%
Latin America & The Caribbean	17	2.27%
Multi-Regional	39	5.21%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

**Table 26 | Respondents By Size Of Organisation**

Size of Organisation	Number Of Respondents	Percentage Of Respondents
<100	179	23.93%
100-500	68	9.09%
500-1000	49	6.55%
1000-2000	108	14.44%
2000-5000	96	12.83%
>5000	213	28.48%
Other/not given	35	4.68%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

**Table 27 | Respondents By Gender**

Gender	Number Of Respondents	Percentage Of Respondents
Female	216	28.88%
Male	322	43.05%
Other	4	0.53%
Prefer not to say/not given	206	27.54%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

**Table 28 | Respondents By Age**

Age Band	Number Of Respondents	Percentage Of Respondents
18-30	127	16.98%
30-45	246	32.89%
45-60	135	18.05%
60+	37	4.95%
Other/not given	203	27.14%
<b>Total</b>	<b>748</b>	<b>100.00%</b>

## Appendix 4: Methodology

The GGFI provides ratings of the green finance offering of financial centres. The process involves taking two sets of ratings – one from survey respondents and one generated by a statistical model – and combining them into a single rating.

For the first set of ratings, the financial centre assessments, respondents use an [online questionnaire](#) to rate the depth and quality of each financial centre's green finance offering, using a 10 point scale ranging from little depth/very poor to mainstream/excellent. Responses are sought from a range of individuals drawn from the financial services sector, non-governmental organisations, regulators, universities, and trade bodies.

For the second set of ratings, we use a database of indicators, or Instrumental Factors, that contain quantitative data about each financial centre. We use a machine learning algorithm to investigate the correlation between the financial centre assessments and these Instrumental Factors, to predict how each respondent would have rated the financial centres they do not know. These 127 Instrumental Factors draw on data from a range of different sources covering sustainability, business, human capital, and infrastructure, including telecommunications and public transport. A full list of the Instrumental Factors used in the model is in Appendix 5.

The respondents' actual ratings as well as their predicted ratings for the centres they did not rate, are then combined into a single table to produce the ranking. We add the results for depth and quality to produce the GGFI.

### Factors Affecting The Inclusion Of Centres In The GGFI

The questionnaire lists a total of 127 financial centres which can be rated by respondents. The questionnaire also asks whether there are financial centres that will improve their green finance offering significantly over the next two to three years. Centres which are not currently within the questionnaire and which receive a number of mentions in response to this question will be added to the questionnaire for future editions.

We give a financial centre a GGFI rating and ranking if it receives a statistically significant minimum number of assessments from individuals based in other geographical locations - at least 25 in GGFI 14. This means that not all 127 centres in the questionnaire receive a ranking.

We will also develop rules as successive indices are published as to when a centre may be removed from the rankings, for example, if over a 24 month period, a centre has not received a minimum number of assessments.

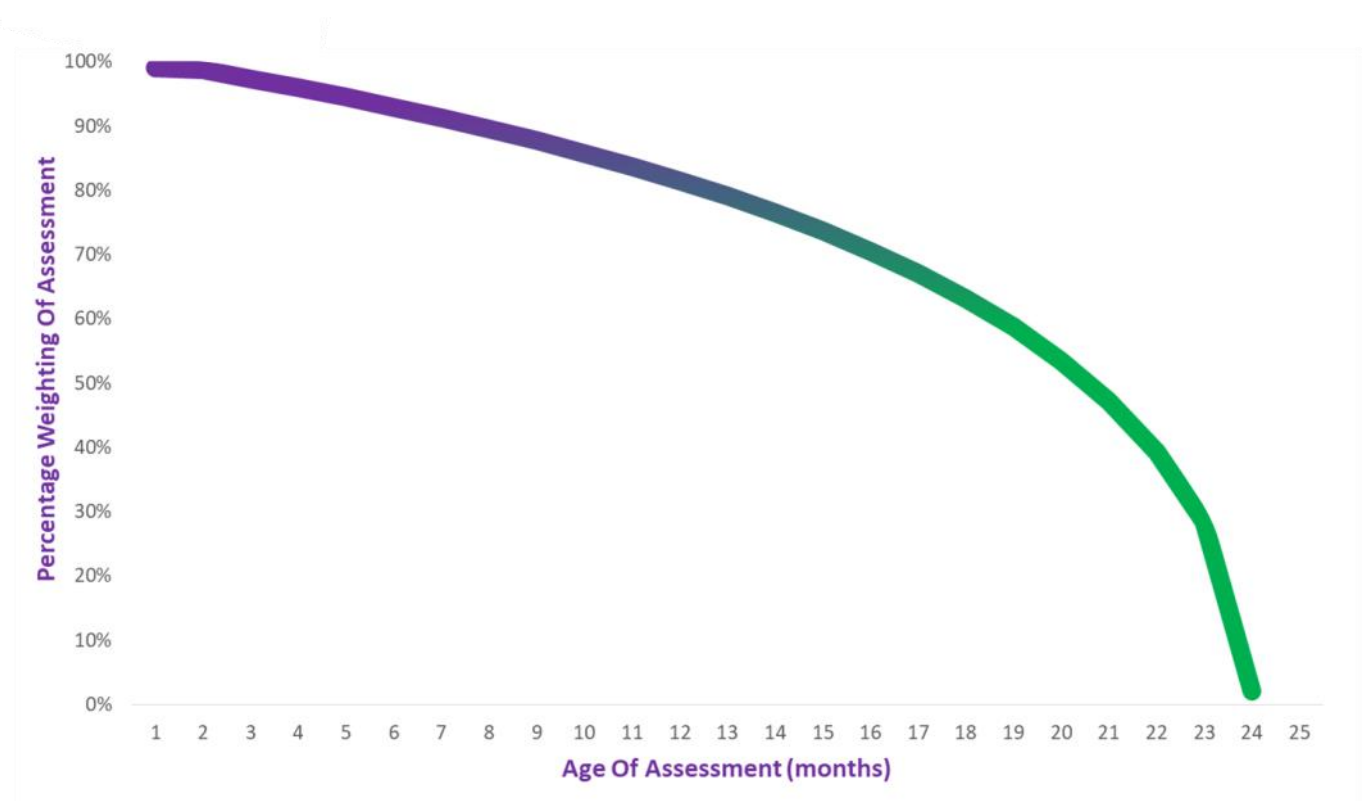
## Financial Centre Assessments

Financial centre assessments are collected via an online questionnaire which runs continuously and which is at [greenfinanceindex.net/survey/](https://greenfinanceindex.net/survey/). A link to this questionnaire is emailed to a target list of respondents at regular intervals. Other interested parties can complete the questionnaire by following the link given in GGFI publications.

In calculating the GGFI:

- the score given by a respondent to their home centre, and scores from respondents who do not specify a home centre, are excluded from the model – this is designed to prevent home bias;
- financial centre assessments are included in the GGFI model for 24 months after they have been received – we consider that this is a period during which assessments maintain their validity; and
- financial centre assessments from the month when the GGFI is created will be given full weighting with earlier responses given a reduced weighting on a logarithmic scale as shown in Chart 45 - this recognises that older ratings, while still valid, are less likely to be up-to-date.

**Chart 45 | Reduction In Weighting As Assessments Get Older**





## Instrumental Factor Data

For the instrumental factors, we have the following data requirements:

- data series should come from a reputable body and be derived by a sound methodology; and
- data series should be readily available (ideally in the public domain) and be regularly updated.

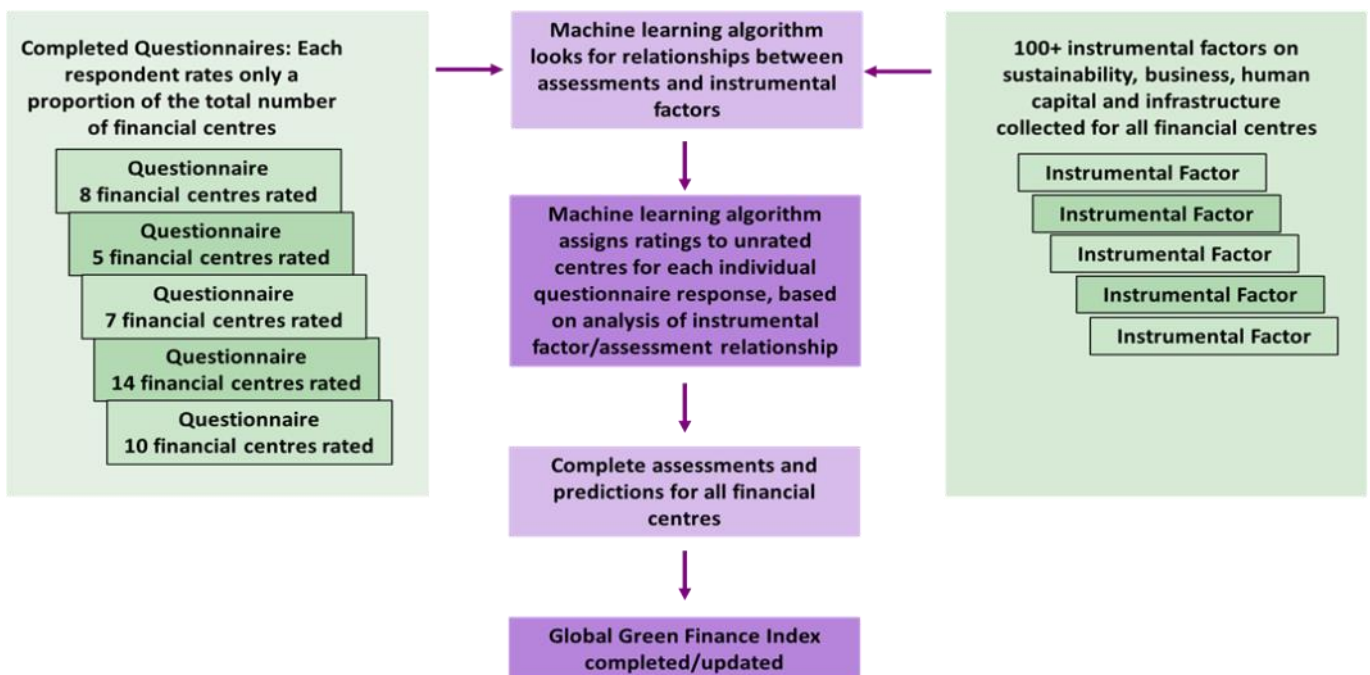
The rules on the use of instrumental factor data in the model are as follows:

- updates to the indices are collected and collated every six months;
- no weightings are applied to indices;
- indices are entered into the GGFI model as directly as possible, whether this is a rank, a derived score, a value, a distribution around a mean or a distribution around a benchmark;
- if a factor is at a national level, the score will be used for all centres in that country; nation-based factors will be avoided if financial centre (city)-based factors are available;
- if an index has multiple values for a city or nation, the most relevant value is used;
- if an index is at a regional level, the most relevant allocation of scores to each centre is made (and the method for judging relevance is noted); and
- if an index does not contain a value for a particular financial centre, a blank is entered against that centre (no average or mean is used).

The details of the methodology can be accessed at <https://www.longfinance.net/programmes/financial-centre-futures/global-green-finance-index/ggfi-methodology/>.

The process of creating the GGFI is outlined in Chart 46.

**Chart 46 | The GGFI Process**



## Appendix 5: Instrumental Factors

**Table 29 | Sustainability Instrumental Factor Correlation With GGFI Ratings**

Instrumental Factors	R-squared
Urban Mobility Readiness Index	0.707
IESE Cities In Motion Index	0.612
Quality Of Living City Rankings	0.525
Sustainable Economic Development	0.502
Energy Transition Index	0.501
World Energy Trilemma Index	0.463
Sustainable Cities Index	0.456
The Green Future Index	0.455
Global Sustainable Competitiveness Index	0.359
The Global Green Economy Index	0.337
Environmental Performance	0.323
Quality Of Life Index	0.220
Pollution Index	0.208
Global Green Growth Index	0.207
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	0.206
Buildings Energy Efficiency Policies Database (Y/N)	0.199
Share Of Wind And Solar In Electricity Production	0.160
Stock Exchanges With A Green Bond Segment (Y/N)	0.073
Share Of Renewables In Electricity Production	0.055
Energy Intensity Of GDP	0.053
CO2 Emissions Per Capita	0.042
Protected Land Area % Of Land Area	0.038
Sovereign Green Bond (Y/N)	0.036
Forestry Area	0.033
Sustainable Stock Exchanges (Y/N)	0.015
City Commitment To Carbon Reduction (Cooperative Action)	0.008
City Commitment To Carbon Reduction (Individual Action)	0.008
Average Precipitation In Depth (mm Per Year)	0.000

**Table 30 | All Instrumental Factor Correlation With GGFI Ratings - Highest 30 Factors**

Instrumental Factors	R-squared
Urban Mobility Readiness Index	0.707
Safe Cities Index	0.649
The Global Financial Centres Index	0.625
IESE Cities In Motion Index	0.612
Global Innovation Index	0.608
International IP Index	0.559
Adjusted Net National Income Per Capita	0.555
Legatum Prosperity Index	0.546
Cost Of Living City Rankings	0.531
Quality Of Living City Rankings	0.525
Logistics Performance Index	0.524
Travel & Tourism Development Index	0.520
Sustainable Economic Development	0.502
Energy Transition Index	0.501
Government Effectiveness	0.493
Global Competitiveness Index	0.481
Agility Emerging Markets Logistics Index	0.469
World Energy Trilemma Index	0.463
Sustainable Cities Index	0.456
The Green Future Index	0.455
Innovation Cities Global Index	0.452
JLL Real Estate Transparency Index	0.450
Quality Of Domestic Transport Network	0.433
Fintech Activity Index	0.431
Quality Of Road Infrastructure	0.416
International Construction Cost Index	0.412
Corruption Perception Index	0.411
World Competitiveness Scoreboard	0.410
OECD Country Risk Classification	0.404
World Talent Rankings	0.403

**Table 31 | Sustainability Factors**

Instrumental Factor	Source	Website	Updated
Average Precipitation In Depth (mm Per Year)	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRCP.MM">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=AG.LND.PRCP.MM</a>	Y
Buildings Energy Efficiency Policies Database (Y/N)	IEA	<a href="https://www.iea.org/policies">https://www.iea.org/policies</a>	N
City Commitment To Carbon Reduction (Cooperative Action)	UNFCCC	<a href="https://climateaction.unfccc.int/Actors">https://climateaction.unfccc.int/Actors</a>	Y
City Commitment To Carbon Reduction (Individual Action)	UNFCCC	<a href="https://climateaction.unfccc.int/Actors">https://climateaction.unfccc.int/Actors</a>	Y
CO2 Emissions Per Capita	World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=2&amp;series=EN.ATM.CO2E.PC&amp;country=#">https://databank.worldbank.org/reports.aspx?source=2&amp;series=EN.ATM.CO2E.PC&amp;country=#</a>	Y
Energy Intensity Of GDP	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>	N
Energy Transition Index	World Economic Forum	<a href="https://www.weforum.org/reports/1edb4488-deb4-4151-9d4f-ff355eec499a/in-full/rankings">https://www.weforum.org/reports/1edb4488-deb4-4151-9d4f-ff355eec499a/in-full/rankings</a>	N
Environmental Performance Index	Yale University	<a href="https://epi.yale.edu/">https://epi.yale.edu/</a>	Y
Forestry Area	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=AG.LND.FRST.ZS&amp;country=">http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=AG.LND.FRST.ZS&amp;country=</a>	Y
Global Green Growth Index	GGGI	<a href="https://ggindex-simtool.gggi.org/">https://ggindex-simtool.gggi.org/</a>	Y
Global Sustainable Competitiveness Index	Solability	<a href="http://solability.com/the-global-sustainable-competitiveness-index/the-index">http://solability.com/the-global-sustainable-competitiveness-index/the-index</a>	N
IESE Cities In Motion Index	IESE	<a href="http://citiesinmotion.iese.edu/indicecim/?lang=en">http://citiesinmotion.iese.edu/indicecim/?lang=en</a>	Y
Pollution Index	Numbeo	<a href="https://www.numbeo.com/pollution/rankings.jsp">https://www.numbeo.com/pollution/rankings.jsp</a>	Y
Proportion Of Population Using Safely-Managed Drinking-Water Services (%)	WHO	<a href="https://www.who.int/data/gho/publications/world-health-statistics">https://www.who.int/data/gho/publications/world-health-statistics</a>	N
Protected Land Area % Of Land Area	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=ER.LND.PTLD.ZS&amp;country=">http://databank.worldbank.org/data/reports.aspx?source=2&amp;series=ER.LND.PTLD.ZS&amp;country=</a>	Y
Quality Of Life Index	Numbeo	<a href="http://www.numbeo.com/quality-of-life/rankings.jsp">http://www.numbeo.com/quality-of-life/rankings.jsp</a>	Y
Quality Of Living City Rankings	Mercer	<a href="https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings">https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings</a>	Y
Share Of Renewables In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>	N
Share Of Wind And Solar In Electricity Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>	N
Sovereign Green Bond (Y/N)	Climate Bonds	<a href="https://www.climatebonds.net/2021/11/cop26-briefing-sovereign-green-bond-issuance-takes-start-long-boom">https://www.climatebonds.net/2021/11/cop26-briefing-sovereign-green-bond-issuance-takes-start-long-boom</a>	N
Stock Exchanges With A Green Bond Segment (Y/N)	CBI	<a href="https://www.climatebonds.net/green-bond-segments-stock-exchanges">https://www.climatebonds.net/green-bond-segments-stock-exchanges</a>	N
Sustainable Cities Index	Arcadis	<a href="https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-index-2018/citizen-centric-cities/">https://www.arcadis.com/en/global/our-perspectives/sustainable-cities-index-2018/citizen-centric-cities/</a>	Y
Sustainable Economic Development	Boston Consulting Group	<a href="https://www.bcg.com/en-gb/publications/2021/prioritizing-societal-well-being-seda-report">https://www.bcg.com/en-gb/publications/2021/prioritizing-societal-well-being-seda-report</a>	N
Sustainable Stock Exchanges (Y/N)	UN Sustainable Stock Exchange Initiative	<a href="https://sseinitiative.org/exchanges-filter-search/">https://sseinitiative.org/exchanges-filter-search/</a>	N
World Energy Trilemma Index	World Energy Council	<a href="https://trilemma.worldenergy.org/">https://trilemma.worldenergy.org/</a>	Y
Urban Mobility Readiness Index	Oliver Wyman	<a href="https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index/ranking.html">https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index/ranking.html</a>	N
The Green Future Index	MIT Technology Review	<a href="https://www.technologyreview.com/2023/04/05/1070581/the-green-future-index-2023/">https://www.technologyreview.com/2023/04/05/1070581/the-green-future-index-2023/</a>	N
The Global Green Economy Index	Dual Citizen	<a href="https://dualcitizeninc.com/global-green-economy-index/">https://dualcitizeninc.com/global-green-economy-index/</a>	Y

Table 32 | Human Capital Factors

Instrumental Factor	Source	Website	Updated
Average Wages	OECD	<a href="https://data.oecd.org/earnwage/average-wages.htm">https://data.oecd.org/earnwage/average-wages.htm</a>	N
Adjusted Net National Income Per Capita	World Bank	<a href="https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD">https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD</a>	Y
Corruption Perception Index	Transparency International	<a href="https://www.transparency.org/en/cpi/2023">https://www.transparency.org/en/cpi/2023</a>	Y
Cost Of Living City Rankings	Mercer	<a href="https://www.mercer.com/our-thinking/career/cost-of-living.html">https://www.mercer.com/our-thinking/career/cost-of-living.html</a>	Y
Crime Index	Numbeo	<a href="http://www.numbeo.com/crime/rankings.jsp#">http://www.numbeo.com/crime/rankings.jsp#</a>	Y
Educational Attainment, At Least Bachelor's Or Equivalent, Population 25+, Total (%)	World Bank	<a href="https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS">https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS</a>	Y
Employees Working Very Long Hours	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>	N
English proficiency	Education First	<a href="https://www.ef.com/wwen/epi/">https://www.ef.com/wwen/epi/</a>	N
GDP Per Person Employed (Constant 2017 PPP \$)	World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=SL.GDP.PCAP.EM.KD">https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=SL.GDP.PCAP.EM.KD</a>	N
Global Cities Index	AT Kearney	<a href="https://www.kearney.com/service/global-business-policy-">https://www.kearney.com/service/global-business-policy-</a>	N
Global Health Security Index	Nuclear Threat Initiative, Johns Hopkins Center for Health Security, and Economist Impact	<a href="https://www.ghsindex.org/">https://www.ghsindex.org/</a>	N
Global Innovation Index	WIPO	<a href="http://www.globalinnovationindex.org/content.aspx?page=GII-Home">http://www.globalinnovationindex.org/content.aspx?page=GII-Home</a>	N
Global Peace Index	Institute for Economics & Peace	<a href="https://www.visionofhumanity.org/maps/#/">https://www.visionofhumanity.org/maps/#/</a>	N
Global Skills Index	Coursera	<a href="https://www.coursera.org/skills-reports/global">https://www.coursera.org/skills-reports/global</a>	Y
Global Terrorism Index	Institute for Economics & Peace	<a href="https://www.visionofhumanity.org/maps/global-terrorism-index/#/">https://www.visionofhumanity.org/maps/global-terrorism-index/#/</a>	Y
Good Country Index	Good Country Party	<a href="https://www.goodcountry.org/index/results">https://www.goodcountry.org/index/results</a>	N
Government Effectiveness	World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	N
Gross Tertiary Graduation Ratio	World Bank	<a href="https://liveprod.worldbank.org/en/indicator/se-ter-cmpl-zs?gender=total">https://liveprod.worldbank.org/en/indicator/se-ter-cmpl-zs?gender=total</a>	Y
Health Care Index	Numbeo	<a href="http://www.numbeo.com/health-care/rankings.jsp">http://www.numbeo.com/health-care/rankings.jsp</a>	Y
Henley Passport Index	Henley Partners	<a href="https://www.henleypassportindex.com/passport">https://www.henleypassportindex.com/passport</a>	Y
Homicide Rates	UNODC	<a href="https://dataunodc.un.org/dp-intentional-homicide-victims">https://dataunodc.un.org/dp-intentional-homicide-victims</a>	Y
Household Net Financial Wealth	OECD	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=BLI">https://stats.oecd.org/Index.aspx?DataSetCode=BLI</a>	N
Human Development Index	UNDP	<a href="https://www.undp.org/arab-states/publications/human-">https://www.undp.org/arab-states/publications/human-</a>	Y
Human Freedom Index	Cato Institute	<a href="https://www.cato.org/human-freedom-index">https://www.cato.org/human-freedom-index</a>	Y
Individual Income Tax Rates	PWC	<a href="https://taxsummaries.pwc.com/quick-charts/personal-income">https://taxsummaries.pwc.com/quick-charts/personal-income</a>	New
Innovation Cities Global Index	2ThinkNow Innovation Cities	<a href="https://innovation-cities.com/world-city-rankings/">https://innovation-cities.com/world-city-rankings/</a>	N
International IP Index	U.S. Chamber of Commerce	<a href="https://www.uschamber.com/intellectual-property/2023-">https://www.uschamber.com/intellectual-property/2023-</a>	Y
Legatum Prosperity Index	Legatum Institute	<a href="http://www.prosperity.com/#/ranking">http://www.prosperity.com/#/ranking</a>	N
Life Expectancy At Birth, Total	World Bank	<a href="https://data.worldbank.org/indicator/SP.DYN.LE00.IN">https://data.worldbank.org/indicator/SP.DYN.LE00.IN</a>	Y
Number Of High Net Worth Individuals	Capgemini	<a href="https://www.worldwealthreport.com/">https://www.worldwealthreport.com/</a>	Y
Number Of International Association Meetings	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-">http://reports.weforum.org/travel-and-tourism-</a>	N
OECD Country Risk Classification	OECD	<a href="http://www.oecd.org/trade/topics/export-credits/documents/">http://www.oecd.org/trade/topics/export-credits/documents/</a>	N
Open Government	World Justice Project	<a href="http://worldjusticeproject.org/rule-of-law-index">http://worldjusticeproject.org/rule-of-law-index</a>	N
Patent Applications, Residents	World Bank	<a href="https://data.worldbank.org/indicator/IP.PAT.RESD?">https://data.worldbank.org/indicator/IP.PAT.RESD?</a>	Y
People Near Services	ITDP	<a href="https://pedestriansfirst.itdp.org/">https://pedestriansfirst.itdp.org/</a>	N
Personal Tax Rates	OECD	<a href="https://stats.oecd.org/index.aspx?DataSetCode=TABLE_I6">https://stats.oecd.org/index.aspx?DataSetCode=TABLE_I6</a>	N
Political Stability And Absence Of Violence/ Terrorism	World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	Y
Press Freedom Index	Reporters Without Borders (RSF)	<a href="https://rsf.org/en/index?year=2023">https://rsf.org/en/index?year=2023</a>	N

**Table 32 | (Continued) Human Capital Factors**

Instrumental Factor	Source	Website	Updated
Prime International Residential Index	Knight Frank	<a href="https://www.knightfrank.com/research/report-library/the-wealth-report-2023-10000.aspx">https://www.knightfrank.com/research/report-library/the-wealth-report-2023-10000.aspx</a>	Y
Proportion Of Seats Held By Women In National Parliament	World Bank	<a href="https://data.worldbank.org/indicator/SG.GEN.PARL.ZS">https://data.worldbank.org/indicator/SG.GEN.PARL.ZS</a>	New
Purchasing Power Index	Numbeo	<a href="https://www.numbeo.com/quality-of-life/rankings.jsp?title=2023&amp;displayColumn=1">https://www.numbeo.com/quality-of-life/rankings.jsp?title=2023&amp;displayColumn=1</a>	Y
Ratio Of Female To Male Labor Force Participation Rate	World Bank	<a href="https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS">https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS</a>	New
Regulatory Quality	World Bank	<a href="http://info.worldbank.org/governance/wgi/">http://info.worldbank.org/governance/wgi/</a>	Y
Tax Revenue As Percentage Of GDP	World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=2&amp;series=GC.TAX.TOTL.GD.ZS&amp;country=#">https://databank.worldbank.org/reports.aspx?source=2&amp;series=GC.TAX.TOTL.GD.ZS&amp;country=#</a>	N
Top Tourism Destinations	Euromonitor	<a href="https://go.euromonitor.com/white-paper-travel-211202-top-100-city-destinations-index.html">https://go.euromonitor.com/white-paper-travel-211202-top-100-city-destinations-index.html</a>	N
Travel & Tourism Development Index	World Economic Forum	<a href="https://www3.weforum.org/docs/WEF_Travel_Tourism_Development_2021.pdf">https://www3.weforum.org/docs/WEF_Travel_Tourism_Development_2021.pdf</a>	Y
World Talent Rankings	IMD	<a href="https://www.imd.org/centers/world-competitiveness-center/rankings/world-competitiveness/">https://www.imd.org/centers/world-competitiveness-center/rankings/world-competitiveness/</a>	N

**Table 33 | Business Factors**

Instrumental Factor	Source	Website	Updated
Broad Stock Index Levels	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/june-2024/market-statistics">https://focus.world-exchanges.org/issue/june-2024/market-statistics</a>	Y
Capitalisation Of Stock Exchanges	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/june-2024/market-statistics">https://focus.world-exchanges.org/issue/june-2024/market-statistics</a>	Y
Common Law Countries	CIA	<a href="https://www.cia.gov/the-world-factbook/countries/">https://www.cia.gov/the-world-factbook/countries/</a>	N
Corporate Tax Rates	PWC	<a href="https://taxsummaries.pwc.com/quick-charts/corporate-income-tax-cit-rates">https://taxsummaries.pwc.com/quick-charts/corporate-income-tax-cit-rates</a>	New
Country Brand Ranking	Bloom Consulting	<a href="https://www.bloom-consulting.com/en/pdf/rankings/Bloom_Consulting_Country_Brand_Ranking_Tourism.pdf">https://www.bloom-consulting.com/en/pdf/rankings/Bloom_Consulting_Country_Brand_Ranking_Tourism.pdf</a>	Y
Democracy Index	The Economist	<a href="https://www.eiu.com/n/campaigns/democracy-index-2023/">https://www.eiu.com/n/campaigns/democracy-index-2023/</a>	Y
Domestic Credit To Private Sector (% Of GDP)	World Bank	<a href="https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?most_recent_value_desc=false">https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?most_recent_value_desc=false</a>	Y
Economic Freedom	The Heritage Foundation	<a href="https://www.heritage.org/index/ranking">https://www.heritage.org/index/ranking</a>	Y
Economic Performance Index	The Brookings Institution	<a href="https://www.brookings.edu/research/global-metro-monitor-2018/#rank">https://www.brookings.edu/research/global-metro-monitor-2018/#rank</a>	N
External Positions Of Central Banks As A Share Of GDP	The Bank for International Settlements	<a href="https://data.bis.org/topics/LBS/tables-and-dashboards/BIS_LBS_A2.1.0">https://data.bis.org/topics/LBS/tables-and-dashboards/BIS_LBS_A2.1.0</a>	Y
FATF AML Effectiveness	FATF	<a href="http://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html">http://www.fatf-gafi.org/publications/mutualevaluations/documents/assessment-ratings.html</a>	N
FDI Inward Stock (In Million Dollars)	UNCTAD	<a href="https://unctad.org/publication/world-investment-report-2024">https://unctad.org/publication/world-investment-report-2024</a>	Y
Financial Secrecy Index	Tax Justice Network	<a href="http://www.financialsecrecyindex.com/">http://www.financialsecrecyindex.com/</a>	N
Fintech Activity Index	World Bank	<a href="https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099735504212234006/p1730060695b370090908c0bf80ed27eba6">https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099735504212234006/p1730060695b370090908c0bf80ed27eba6</a>	N
Foreign Direct Investment Inflows	UNCTAD	<a href="http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740">http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740</a>	N
GINI Index	World Bank	<a href="https://data.worldbank.org/indicator/SI.POV.GINI">https://data.worldbank.org/indicator/SI.POV.GINI</a>	New
Global Business Complexity Index	TMF Group	<a href="https://www.tmf-group.com/en/news-insights/press-releases/gbci-rankings-revealed-2024/">https://www.tmf-group.com/en/news-insights/press-releases/gbci-rankings-revealed-2024/</a>	Y
Global Connectedness Index	DHL	<a href="https://www.dhl.com/global-en/spotlight/globalization/global-connectedness-index.html">https://www.dhl.com/global-en/spotlight/globalization/global-connectedness-index.html</a>	Y

Table 33 | (Continued) Business Factors

Instrumental Factor	Source	Website	Updated
Global Services Location	AT Kearney	<a href="https://www.kearney.com/service/digital/gslj">https://www.kearney.com/service/digital/gslj</a>	Y
Government Debt As % Of GDP	IMF	<a href="https://www.imf.org/external/datamapper/GG_DEBT_GDP@GDD/SWE">https://www.imf.org/external/datamapper/GG_DEBT_GDP@GDD/SWE</a>	N
Jurisdictions Participating In The Convention On Mutual Administrative Assistance In Tax Matters	OECD	<a href="https://www.oecd.org/ctp/exchange-of-tax-information/Status_of_convention.pdf">https://www.oecd.org/ctp/exchange-of-tax-information/Status_of_convention.pdf</a>	N
Level of Internet Freedom	Freedom House	<a href="https://freedomhouse.org/countries/freedom-net/scores">https://freedomhouse.org/countries/freedom-net/scores</a>	N
Net External Positions Of Banks	The Bank for International Settlements	<a href="https://data.bis.org/topics/LBS/tables-and-dashboards/BIS,LBS_A3,1.0">https://data.bis.org/topics/LBS/tables-and-dashboards/BIS,LBS_A3,1.0</a>	Y
Number of Tax Treaties	ICTD	<a href="https://www.treaties.tax/en/data/">https://www.treaties.tax/en/data/</a>	New
Open Budget Survey	International Budget Partnership	<a href="http://survey.internationalbudget.org/#download">http://survey.internationalbudget.org/#download</a>	Y
Percentage Of Firms Using Banks To Finance Investment	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=IC.FRM.BNKS.ZS">http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators&amp;series=IC.FRM.BNKS.ZS</a>	Y
Real Interest Rate	World Bank	<a href="https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=FR.INR.RINR">https://databank.worldbank.org/reports.aspx?source=world-development-indicators&amp;series=FR.INR.RINR</a>	Y
Safe Cities Index	The Economist	<a href="https://safecities.economist.com/">https://safecities.economist.com/</a>	N
The Global Financial Centres Index	Z/Yen	<a href="https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/">https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/</a>	Y
The Global Fintech Index	Findexable	<a href="https://findexable.com/">https://findexable.com/</a>	N
Total Net Assets Of Regulated Open-End Funds	Investment Company Institute	<a href="http://www.icifactbook.org/">http://www.icifactbook.org/</a>	Y
TRACE Bribery Risk Matrix	Trace International	<a href="https://matrixbrowser.traceinternational.org/">https://matrixbrowser.traceinternational.org/</a>	N
Value Of Bond Trading	The World Federation of Stock Exchanges	<a href="https://statistics.world-exchanges.org/ReportGenerator/Generator#">https://statistics.world-exchanges.org/ReportGenerator/Generator#</a>	Y
Value Of Share Trading	The World Federation of Stock Exchanges	<a href="https://focus.world-exchanges.org/issue/june-2024/market-statistics">https://focus.world-exchanges.org/issue/june-2024/market-statistics</a>	Y
Volume Of Share Trading	The World Federation of Stock Exchanges	<a href="https://statistics.world-exchanges.org/ReportGenerator/Generator#">https://statistics.world-exchanges.org/ReportGenerator/Generator#</a>	Y
World Competitiveness Scoreboard	IMD	<a href="https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/rankings/wcr-rankings/#_tab_List">https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/rankings/wcr-rankings/#_tab_List</a>	Y

**Table 34 | Infrastructure Factors**

Instrumental Factor	Source	Website	Updated
Agility Emerging Markets Logistics Index	Agility	<a href="https://www.agility.com/en/emerging-markets-logistics-index/rankings/">https://www.agility.com/en/emerging-markets-logistics-index/rankings/</a>	Y
Global Competitiveness Index	World Economic Forum	<a href="http://reports.weforum.org/global-competitiveness-report-2019/competitiveness-rankings/">http://reports.weforum.org/global-competitiveness-report-2019/competitiveness-rankings/</a>	N
INRIX Traffic Scorecard	INRIX	<a href="http://inrix.com/scorecard/">http://inrix.com/scorecard/</a>	Y
International Construction Cost Index	Arcadis	<a href="https://www.arcadis.com/en/knowledge-hub/perspectives/global/international-construction-costs">https://www.arcadis.com/en/knowledge-hub/perspectives/global/international-construction-costs</a>	Y
JLL Real Estate Transparency Index	Jones Lang LaSalle	<a href="https://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index">https://www.jll.co.uk/en/trends-and-insights/research/global-real-estate-transparency-index</a>	N
Liner Shipping Connectivity Index	World Bank	<a href="http://databank.worldbank.org/data/reports.aspx?">http://databank.worldbank.org/data/reports.aspx?</a>	Y
Logistics Performance Index	World Bank	<a href="http://lpi.worldbank.org/international/global">http://lpi.worldbank.org/international/global</a>	N
Metro Network Length	Metro Bits	<a href="http://mic-ro.com/metro/table.html">http://mic-ro.com/metro/table.html</a>	N
Quality Of Domestic Transport Network	World Economic Forum	<a href="https://www.weforum.org/reports/travel-and-tourism-development-index-2021/">https://www.weforum.org/reports/travel-and-tourism-development-index-2021/</a>	N
Quality Of Road Infrastructure	World Economic Forum	<a href="http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=EOSQ057">http://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/rankings/#series=EOSQ057</a>	N
Railways Per Land Area	CIA	<a href="https://www.cia.gov/the-world-factbook/field/railways/country-comparison">https://www.cia.gov/the-world-factbook/field/railways/country-comparison</a>	N
Refined Oil Products Production	Enerdata Statistical Yearbook	<a href="https://yearbook.enerdata.net/download/">https://yearbook.enerdata.net/download/</a>	N
Roadways Per Land Area	CIA	<a href="https://www.cia.gov/the-world-factbook/field/roadways/country-comparison">https://www.cia.gov/the-world-factbook/field/roadways/country-comparison</a>	Y
Smart City Index	IMD	<a href="https://www.imd.org/smart-city-observatory/smart-city-index/">https://www.imd.org/smart-city-observatory/smart-city-index/</a>	Y
Telecommunication Infrastructure Index	UN	<a href="https://publicadministration.un.org/egovkb/en-us/Data-Center">https://publicadministration.un.org/egovkb/en-us/Data-Center</a>	N
Tomtom Traffic Index	TomTom	<a href="https://www.tomtom.com/en_gb/traffic-index/ranking/">https://www.tomtom.com/en_gb/traffic-index/ranking/</a>	Y



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**Financial Centres**

Vantage Financial Centres is an exclusive network of financial centres around the world looking for a deeper understanding of financial centre competitiveness. Members receive enhanced access to GGFI and GFCI data, marketing opportunities, and training for centres seeking to enhance their profile and reputation.



Supported by the industry, the Financial Services Development Council (FSDC) is a high-level, cross-sectoral advisory body to the Hong Kong Special Administrative Region Government.

FSDC formulates proposals to promote the further development of Hong Kong's financial services industry and to map out the strategic direction for the development. As of March 2020, 110 of the 137 policy recommendations had been adopted by the Government and relevant regulators since FSDC's inception in 2013. On top of research, FSDC also carries out market promotion and human capital development functions.

Among others, FSDC focuses on topics including Mainland and international connectivity, green and sustainable finance, FinTech, as well as asset and wealth management.

[enquiry@fsdc.org.hk](mailto:enquiry@fsdc.org.hk)  
<https://www.fsdc.org.hk/en>



The Astana International Financial Centre (AIFC) serves as a leading financial hub in the Central Asian and Eastern European region, integrating advanced capabilities and best practices from prominent financial centres around the world. It is the first in the region to establish a comprehensive legal framework designed to attract, protect, and facilitate investment, grounded in business-friendly laws that reflect the principles, norms, and precedents of the law of England and Wales, as well as the standards of the world's leading financial centres.

The AIFC offers its participants and investors exceptional conditions and opportunities, including an independent judiciary, an IOSCO-recognised regulatory framework, a diverse range of financial services and instruments, streamlined visa and employment procedures, and a zero corporate tax rate for licensed companies.

The AIFC is currently home to over 3,000 companies from 82 countries, including the US, UK, EU, China, Turkey, Hong Kong, Singapore and the Middle East.

Since its inception, investments facilitated through the AIFC platform have exceeded \$12 billion, highlighting its key role in driving economic growth and development in Kazakhstan.

[www.aifc.kz](http://www.aifc.kz)



The Long Finance initiative grew out of the London Accord, a 2005 agreement among investment researchers to share environmental, social and governance research with policy-makers and the public. Long Finance was established more formally by Z/Yen Group and Gresham College from 2007 with the aim of exploring long-term thinking across a global network of people.

We work on researching innovative ways of building a more sustainable financial system. In so doing, we try to operate openly and emulate scientific ideals. At the same time, we are looking to create a supportive and caring community where people can truly question the accepted paradigms of risk and reward.

[www.longfinance.net](http://www.longfinance.net)



Since 2009 Busan Metropolitan City has been developing a financial hub specialising in maritime finance and derivatives. With its strategic location in the center of the southeast economic block of Korea and the crossroads of a global logistics route, Busan envisions growing into an international financial city in Northeast Asia. Busan Finance Center (BFC) will continue to develop and implement measures to promote Busan as the financial hub and bolster the local financial industry, while working together with various local economic players to pursue sustainable growth of the financial sector including FinTech. These efforts will enable BFC to play a leading role in taking Busan to the next level and become the international financial center and maritime capital of Northeast Asia.

BFC offers an attractive incentive package to global financial leaders and cooperation network of Busan Metropolitan City, and Busan Finance Center will support you to identify opportunities in Busan, one of the fastest developing cities in Asia.

[info@kbfc.or.kr](mailto:info@kbfc.or.kr)  
[www.kbfc.or.kr/eng/](http://www.kbfc.or.kr/eng/)

**Vantage**Financial  
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Please find out more at: [www.vantagefinancialcentres.net](http://www.vantagefinancialcentres.net) or by contacting Mike Wardle at [mike\\_wardle@zyen.com](mailto:mike_wardle@zyen.com)



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Daniel Wang at [danielwang@globaltimes.com.cn](mailto:danielwang@globaltimes.com.cn)  
[www.globaltimes.com.cn](http://www.globaltimes.com.cn)

Financial  
Services  
Commission  
MAURITIUS

Established in 2001, the Financial Services Commission, Mauritius ('FSC') is the integrated regulator for the non-bank financial services sector and global business and is mandated to license, regulate, and supervise the conduct of business activities in the non-bank financial services sector and global business.

Our vision is to be an internationally recognised financial supervisor committed to the sustained development of Mauritius as a sound and competitive financial services centre.

The FSC aims to:

- promote the development, fairness, efficiency and transparency of financial institutions and capital markets;
- suppress crime and malpractices so as to provide protection to members of the public investing in non-banking financial products; and
- ensure the soundness and stability of the financial system in Mauritius.

[fscmauritiust@intnet.mu](mailto:fscmauritiust@intnet.mu)  
[www.fscmauritiust.org](http://www.fscmauritiust.org)

SEOUL METROPOLITAN  
GOVERNMENT

Seoul is a rising star among the financial cities of the world. It is already one of the top 10 cities in the world based on various indices, and it has many more opportunities to offer as a financial hub and great growth potential. Seoul believes global financial companies are our true partners for growth. There are many incentives provided to global financial companies that enter into Seoul, such as the financial incentives provided when moving into IFC, so that we can all jointly work towards the growth and development of the financial market.

It is sure that Seoul will become a top star of global financial hubs in the near future! Pay close attention to Seoul's potentials and pre-emptively gain a foothold in the Seoul financial hub. Seoul is the gateway to Northeast Asia and the world.

Youkyung Cho at [youkyung\\_cho@seoul.go.kr](mailto:youkyung_cho@seoul.go.kr)  
[www.seoul.go.kr/main/index.jsp](http://www.seoul.go.kr/main/index.jsp)

CASABLANCA FINANCE CITY  
القطب المالي للدار البيضاء

Casablanca Finance City is an African financial and business hub located at the crossroads of continents. Recognized as the leading financial center in Africa, and partner of the largest financial centers in the world, CFC has built a strong and thriving community of members across four major categories: financial companies, regional headquarters of multinationals, service providers and holdings.

CFC offers its members an attractive value proposition and a premium "Doing Business" support that fosters the deployment of their activities in Africa. Driven by the ambition to cater to its community, CFC is committed to promoting its members expertise across the continent, while enabling fruitful business and partnership synergies through its networking platform.

Selma Bennis at [Selma.Bennis@cfca.ma](mailto:Selma.Bennis@cfca.ma)

[www.casablancafinancecity.com](http://www.casablancafinancecity.com)

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**Dubai International Financial Centre (DIFC)** is one of the world's most advanced financial centres, and the leading financial hub for the Middle East, Africa and South Asia (MEASA) region, which comprises 72 countries with an approximate population of 3 billion and a nominal GDP of US\$ 7.7 trillion.

DIFC is home to an internationally recognised, independent regulator and a proven judicial system with an English common law framework, as well as the region's largest financial ecosystem of more than 24,000 professionals working across over 2,300 active registered companies – making up the largest and most diverse pool of industry talent in the region. The Centre's vision is to drive the future of finance. Today, it offers one of the region's most comprehensive FinTech and venture capital environments, including cost-effective licensing solutions, fit-for-purpose regulation, innovative accelerator programmes, and funding for growth-stage start-ups.

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Carol Feng at [carolf@cdi.org.cn](mailto:carolf@cdi.org.cn)  
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The Global Green Finance Index provides a measure of how financial centres are responding to the challenge of developing a sustainable economy, enabling centres to compare their performance with their peers, improve policy makers' understanding of the drivers of green growth, and assist them in shaping the financial system to support sustainability goals.

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